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THE

Journal of the Society of Arts,

AND OF

THE INSTITUTIONS IN UNION.

110TH SESSION.] FRIDAY, APRIL 22, 1864. [No. 596. VOL. XII.

Announcements by the Council.

ORDINARY MEETINGS.

Wednesday Evenings, at 8 o'clock.

APRIL 27.—Adjourned Discussion on Mr. Webster's Paper on "The Patent Laws."

CANTOR LECTURES.

The next lecture on "Chemistry applied to the Arts" will be delivered by Dr. F. CRACE CALVERT, F.R.S., F.C.S., corresponding member of the Royal Academy of Turin, of the Société Industrielle de Mulhouse, of the Société Imperiale de Pharmacie de Paris, &c., on Thursday evening, at 8 o'clock, as follows:—

APRIL 28.—LECTURE V.—FLESH, its chief constituents, boiling, roasting, and preservation. *Animal black*, its manufacture and applications. The employment of animal refuse in the manufacture of *prussiate of potash. Prussian blue.* Manufacture of artificial animal manures.

MAY 5.—LECTURE VI.—ANIMAL LIQUIDS.—*Bile*, its purification and detergent properties. *Blood*, its application in the refining of sugar and the manufacture of albumen. *Albumen*, its use in calico printing and photography. *Urine*, its uses. *Milk*, its composition properties, falsification, and preservation. A few words on putrefaction.

ALBERT MEDAL.

The Gold Medal established by the Society in memory of its late President, the Prince Consort, to be called the "Albert Medal," and to bestowed, from time to time, "for distinguished merit in promoting Arts, Manufactures, and Commerce," has been adjudged to Sir Rowland Hill, K.C.B., in recognition of his eminent services to all classes of the community in the creation of the Penny Postage System and other Postal reforms.

DWELLINGS OF THE LABOURING CLASSES.

Referring to the resolutions passed by the Council, on the 16th of March, and printed in No. 591 of the *Journal*, the Council have fixed the Conference on this subject for Thursday and Friday the 26th and 27th of May, at 11·30 each morning, and the following letter of invitation is about to be issued:—

SIR,—The Council have recently been invited to turn their attention to a subject of the gravest importance, viz., the present condition of the Dwellings of the Labouring Classes. At a meeting of the Society, held on Wednesday evening, the 9th December last, Mr. J. C. Morton read a paper on "Agricultural Progress; its Helps and its Hindrances." During the discussion arising upon this paper, the subject of Labourers' Cottages was touched upon, but it was thought to be of such great importance as to demand the special consideration of the Society, and the Council have since given their anxious attention to the consideration of this matter at several of their meetings. During the past century the Society has frequently occupied itself with questions of a similar character, has, on more than one occasion, offered prizes for designs and estimates for Dwellings for the Labouring Classes, has collected statistics connected with their construction, and has now before it sets of plans sent in, in competition for Mr. Denton's and the Society's Prizes; but the improved and cheaper construction of dwellings is only a small portion of this complicated subject. The Council therefore propose to submit this subject to discussion at a Special Conference, to be held here on Thursday, the 26th of May, and the following day.

To this Conference the Council invite all those members of the Society of Arts who have seats in the Legislature, such other members as are known to take a special interest in the subject, the Presidents of the Institutions in Union with the Society, and other noblemen and gentlemen whose co-operation may be deemed important.

The Conference each day will be opened at 11·30 *precisely*, and closed not later than 4 o'clock, the chair being taken by the Chairman of the Council.

The discussion will be taken:—

1. On the insufficient number of habitations for the Labouring Classes in Town and Country.

2. On the badness of the existing accommodation.

3. On the effects arising from this state of things, viz.:—
   (*A*) Religious, moral, and social.
   (*B*) Sanitary.
   (*C*) Economic.

4. On the causes to which these evils may be, or have been, attributed, such as—
   (*A*) The Law of Settlement.
   (*B*) The Poor Laws.
   (*C*) Tenure of Property, such as mortmain, leasehold system, tenancy for life, &c.
   (*D*) Legal difficulties affecting the Transfer of Property.
   (*E*) Difficulty of providing proper Dwellings at a cost which will be remunerative to Capital in Town and Country.

5. Remedies:—
   (*A*) What can be done by Legislation?
   (*B*) What can be done without Legislation?
   (*C*) What assistance, if any, can the Society give in either of these directions?

The Council hope to hear from you that you will attend the Conference, and take part in its deliberations.

I have the honour to be, Sir,
Your obedient Servant,
P. LE NEVE FOSTER,
Secretary.

The Council have appointed the following Committees:—

A Committee to consider and report what memorials should record the sites of the Exhibitions of 1851 and 1862, which were originated by the Society, such Committee to consist of—The Chairman of the Council; Earl Granville: Sir C. W. Dilke, Bart.; Sir J. Paxton, M.P.; Capt. Fowke, R.E.; Messrs. H. Chester; H. Cole, C.B.; Warren De la Rue, F.R.S.; G. Godwin, F.R.S.; P. Graham; Owen Jones; John Kelk; F. Lawrence; M. H. Marsh, M.P.; Marsh Nelson; S. Redgrave; Gilbert Scott, R.A.; Sydney Smirke, R.A.; T. Winkworth, and M. Digby Wyatt.

A Committee to consider and report how the Society may promote the erection of statues or other memorials of persons eminent in Arts, Manufactures, and Commerce, and whether it is desirable that the Society should contribute to the monuments of distinguished individuals, members of the Society; such Committee to consist of—The Chairman of the Council; Earl Stanhope; The Right Honourable Wm. Cowper, M.P.; Lord H. G. Lennox, M.P.; Sir Joseph Paxton, M.P.; Messrs. Bodkin; H. Chester; H. Cole, C.B.; C. Wren Hoskyns; Edward Hamilton; F. Lawrence; S. Redgrave, and T. Winkworth.

The Artistic Copyright Committee met on Tuesday last, to consider what steps should be taken in reference to Mr. Black's Bill for the consolidation and amendment of the Acts relating to Copyright in Works of Literature and the Fine Arts. The Committee approved generally of the objects of the Bill, but considered that the details required careful revision, and they directed a communication to be made to Mr. Black to that effect, with a request for an interview with that gentleman, to which he has consented.

The following Institution has been received into Union since the last announcement:—

Hunslet (near Leeds) Mechanics' Institute.

Prizes for Art-Workmen.

The Council of the Society of Arts hereby offer prizes for Art-Workmanship, according to the following conditions:—

I. The works to be executed will be the property of the producers, but will be retained for exhibition, in London and elsewhere, for such length of time as the Council may think desirable.

II. The exhibitors are required to state in each case the price at which their works may be sold, or if sold previous to exhibition, at what price they would be willing to produce a copy.

III. The awards in each class will be made, and the sums specified in each class will be paid, provided the works be considered of sufficient merit to deserve the payment; and, further, in cases of extraordinary merit additional awards will be given, accompanied with the medal of the Society.

IV. Before the award of prizes is confirmed, the candidates must be prepared to execute some piece of work sufficient to satisfy the Council of their competency.

V. *Bona-fide* Art-workmen only can receive prizes.

VI. All articles for competition must be sent in to the Society's house on or before Saturday, the 26th of November, 1864, and must be delivered free of all charges. Each work sent in competition for a Prize must be marked with the Art-workman's name, or, if preferred, with a cypher, accompanied by a sealed envelope giving the name and address of the Art-workman. With the articles, a description for insertion in the catalogue should be sent.

VII. Although great care will be taken of articles sent for exhibition, the Council will not be responsible for any accident or damage of any kind occurring at any time.

VIII. Prices may be attached to articles exhibited and sales made, and no charge will be made in respect of any such sales.

IX. All the prizes are open to male and female competitors, and in addition, as regards painting in porcelain, decorative painting, and wall mosaics, a second set of prizes of the same amounts will be awarded among female competitors. If a female desires to compete in the female class only, she must declare her intention accordingly. The originals of the works prescribed may be seen at the South Kensington Museum, in the gallery at the entrance to the Sheepshanks pictures.

Casts may be seen at the Society of Arts, Adelphi, London, and the Schools of Art at Edinburgh, Dublin, Manchester, Glasgow, Birmingham, and Hanley in the Potteries.

Photographs, engravings, &c., may be purchased at the Society of Arts, John-street, Adelphi, at the prices named.

*** The Council are happy to announce that several of the works which received first prizes in the competition of 1863, have been purchased by the Department of Science and Art, to be exhibited in the South Kensington Museum and the Art Schools in the United Kingdom.

1st Division.

Works to be Executed from Prescribed Designs.

For the successful rendering the undermentioned designs in the various modes of workmanship according to the directions given in each case. Chromolithographs, woodcuts, photographs, and casts of such designs, will be sold at the Society's house at cost price.

Class 1.—Carving in Marble, Stone, or Wood.

(*a.*) *The Human Figure.*—One prize of £15 for the best and a second prize of £7. 10s. for the next best work executed in marble or stone, after the Boy and Dolphin cast from a chimney-piece, ascribed to *Donatello.* Original in the South Kensington Museum, No. 5,896. Dimensions to be one-eighth less than the cast.

[Cast—Fifteen shillings. Photograph—One shilling.]

(*b.*) *Ornament.*—One prize of £10 for the best and a second Prize of £5 for the next best work executed in marble, stone, or wood after a carved chair-back in the possession of Henry Vaughan, Esq. Dimensions to be two-thirds of the cast.

[Cast—Twelve shillings. Photograph—One shilling.]

c. *Ornament.*—One Prize of £10 for the best, and a second Prize of £5 for the next best work executed in stone, after a *Gothic bracket* in the Architectural Museum. Dimensions the same as the cast. In this design the details may be improved by the introduction of small animals, and the human head may be changed according to the taste of the art-workman.

[Cast—Ten shillings; Photograph—One shilling.]

(*d.*)—One prize of £20 for the best, and a second prize of £10 for the next best, work carved in *wood* after a design by *Holbein*, as an *Inkstand* or *Watch-Holder* on three feet. Diameter of body to be eight inches.

[Wood Engraving—Sixpence.]

(*e.*)—One prize of £15 for the best, and a second prize of £7 10s. for the next best, work carved in wood after the *Head of a Harp* of the period of Louis XVI., in the South Kensington Museum, No. 8531. The head and bust only need be fully completed. Dimensions the same as the cast.

[Cast—Thirty shillings; Photograph—One shilling.]

(*f.*) *Ornament.*—One prize of £10 for the best, and a second prize of £5 for the next best work carved in wood after an *Italian picture frame* in the possession of Henry Vaughan, Esq. Dimensions—Twelve inches high, sight measure.

[Photograph—Two shillings.]

Class 2.—Repoussé Work in any Metal.

(*a.*) *The Human Figure as a bas-relief.*—One prize of £10 for the best and a second prize of £5 for the next best, work executed after *Raphael's* "*Three Graces.*" Dimensions—The figures to be six inches high.

[Photograph—One shilling.]

(*b.*) *Ornament.*—One prize of £5 for the best and a second prize of £3 for the next best, work executed after a Flemish salver in the South Kensington Museum, date about 1670, No. 1153. Dimensions—Twelve inches in diameter.

[Photograph—One shilling.]

Class 3.—Hammered Work, in Iron, Brass, or Copper.

Ornament.—One prize of £7 10s. for the best and a second prize of £5 for the next best, work executed after the portion shown in the Photograph of the Pediment of a Gate (German work, date about 1700,) in the South Kensington Museum, No. 5979. To be adapted for use as a bracket. Dimensions—12 inches deep.

[Photograph—One shilling and threepence.]

Class 4.—Carving in Ivory.

(*a.*) *Human Figure in the round.*—One prize of £15 for the best and a second prize of £10 for the next best, work executed after an *Ivory*, by *Fiamingo*, in the possession of John Webb, Esq. Dimensions—the same as the cast.

[Cast—One Shilling.]

(*b.*) *Ornament.*—One prize of £7 10s. for the best and a second prize of £5 for the next best, work executed after a pair of *Tablets*, in the possession of John Webb, Esq. Dimensions—the same as the cast.

[Cast—One Shilling.]

Class 5.—Chasing in Bronze.

(*a.*) *The Human Figure.*—One prize of £10 for the best and a second prize of £5 for the next best, work executed after a reduced copy of "*Clytie.*" A rough casting in bronze, on which the chasing must be executed, will be supplied by the Society at cost price.

[Plaster Cast—Three shillings and sixpence.]

(*b.*) *Ornament.*—One prize of £10 for the best and a second prize of £7 10s. for the next best, work executed after *Goutier*, from a cabinet in the possession of Her Majesty the Queen. A rough casting in bronze, on which the chasing must be executed, will be supplied by the Society at cost price.

[Plaster Cast—One shilling.]

Class 6.—Etching and Engraving on Metal—Niello Work.

Ornament.—One prize of £10 for the best and a second prize of £5 for the next best, work executed after arabesques by Lucas Van Leyden, 1528. No. 18,968 in the South Kensington Museum. To be engraved the height of the photograph, and, if round a cup or goblet, repeated so as to be not less than nine inches in length when stretched out.

[Photograph—Sixpence.]

Class 7.—Enamel Painting on Copper or Gold.

(*a.*) *The Human Figure.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after *Raphael's design of the* "*Three Graces,*" executed in *grisaille.* Dimensions—The figures are to be four inches high.

[Photograph—One shilling.]

(*b.*) *Ornament.*—One prize of £5 for the best and a second prize of £3 for the next best, work executed after a German arabesque (16th century). No. 19,003 in the South Kensington Museum. Dimensions—The same as the Engraving.

[Photograph—Sixpence.]

Class 8.—Painting on Porcelain.

(*a*) *The Human Figure.*—One prize of £10 for the best and a second prize of £5 for the next best, work executed after *Raphael's* "*Two Children,*" in the cartoon of "*Lystra.*" Dimensions—the same as the Photograph. This work is to be coloured according to the taste of the painter.

[Photograph—Ninepence.]

(*b.*) *Ornament.*—One prize of £5 for the best and a second prize of £3 for the next best, work executed after arabesques by Lucas Van Leyden, 1528, No. 18,968 in the South Kensington Museum, and coloured according to the taste of the painter. Dimensions—Double the size of the Photograph.

[Photograph—Sixpence.]

N.B.—See conditions, Section IX.

Class 9.—Decorative Painting.

(*a.*) *Ornament.*—One prize of £5 and a second prize of £3 for a work, executed after an *ornament*, from *Castel R. Pandino*, near Lodi, from a drawing in the South Kensington Museum, No. 1150. Dimensons—length 4ft.—width, enlarged from the print in the same proportion.

[Coloured Print—One Shilling.]

(*b.*) *Ornament.*—One prize of £5 and a second prize of £3 for a work, executed after a *picture frame*, in the South Kensington Museum, No. 7820. Dimensions—5 feet by 3 feet 11½ inches, outside measure. The works to be executed on canvass, either with or without stretchers in cool colours. Some lines of the mouldings may be gilt.

[Photograph—One shilling and sixpence.]

N.B.—See conditions, Section IX.

Class 10.—Inlays in Wood (Marquetry, or Buhl), Ivory or Metal.

Ornament.—One prize of £5 for the best and a second prize of £3 for the next best, work executed after a specimen in the possession of the Hon. John Ashley. Dimensions—one-third larger than the Lithograph.

[Outline Lithograph—One shilling.]

Class 11.—Cameo Cutting.

(*a.*) *Human Head.*—One prize of £10 for the best and a second prize of £5 for the next best, work executed after *Wyon's* heads of the Queen and the Prince Consort, on the Juror's medal of 1851.

(*b*) *Animal.*—One prize of £10 for the best and a second prize of £5 for the next best, work executed after *Wyon's* "*St. George and the Dragon,*" on the Prince Consort's medal. Dimensions the same as the casts.

[Casts—Sixpence each.]

Class 12.—Engraving on Glass.

Ornament.—One prize of £5 for the best and a second prize of £3 for the next best, work executed after arabesques by Lucas Van Leyden, 1528. No. 18,968 in the South Kensington Museum. To be engraved the height of the engraving; and if round a glass or goblet, repeated so as to be not less than 9 inches long when stretched out.

[Photograph—Sixpence.]

Class 13.—Wall Mosaics.

Human Head.—One prize of £15 for the best and a second prize of £10 for the next best, work executed after *Bertini*, of Milan. A preparatory drawing must be made, coloured, after the lithograph, on which the lines and disposition of the Tesseræ must be marked. The dimensions of the work to be regulated by the size of the Tesseræ proposed to be used, which size may be left to the choice of the artist. Although desirable, it is not necessary to execute the whole subject in actual mosaic, but if a part only be done, the eye must be in such portion. A coloured drawing, with Tesseræ, may be seen at the Society's house, and in the South Kensington Museum, and Tesseræ of two sizes may be obtained from Messrs. Minton, Stoke-upon-Trent, and Messrs. Maw and Co., Brosely, Shropshire.

[Lithograph Outline Coloured—Two Shillings.]

N.B.—See conditions, Section IX.

Class 14.—Gem Engraving.

(*a.*) *Human head.*—One prize of £10 for the best and a second prize of £5 for the next best work executed after an original in the possession of John Webb, Esq. Dimensions—the same as the cast.

[Cast—Sixpence.]

(*b.*) *Full-length figure.*—One prize of £10 for the best and a second prize of £5 for the next best work executed after an original in the possession of John Webb. Esq. Dimensions—the same as the cast.

[Cast—Sixpence.]

Class 15.—Die Sinking.

Human head.—One prize of £10 for the best, and a second prize of £5 for the next best work executed after the head of the Prince Consort, by *Wyon*, on the Society's medal. Dimensions half the size of the original.

[Cast—Sixpence.]

Class 16.—Glass Blowing.

Ornament.—One prize of £7 10s. for the best and a second prize of £5 for the next best, work executed after an original in the South Kensington Museum, No. 1813.—Dimensions as given in the wood engraving.

[Engraving—One shilling.]

Class 17.—Bookbinding and Leather Work.

(*a.*) *Bookbinding.*—One prize of £7 10s. for the best and a second prize of £5 for the next best work executed in bookbinding, after an Italian specimen in the South Kensington Museum, No. 7,925. The work to be bound should be some classical author of the size given. Dimensions—the same as the photograph.

[Photograph—One shilling.]

(*b.*) *Leatherwork.*—One prize of £7 10s. for the best, and a second prize of £5 for the next best work of boiled and cut leatherwork for the outside covering of a jewel casket. Original in the South Kensington Museum, No. 7768. Dimensions—one-third larger than the photograph.

[Photograph—One shilling.]

Class 18.—Embroidery.

Ornament.—One prize of £5 for the best and a second prize of £3 for the next best, work executed either after a German example in the Green Vaults at Dresden, or an Italian Silk in the South Kensington Museum, No. 7468, which may be adapted to a screen. Dimensions, according to the taste of the embroiderer.

[Photograph—German, Sixpence; Italian, One shilling.]

⁂ The plaster casts may be obtained from D. Brucciani, 39, Russell-street, Covent-garden, W.C.

2nd Division.

Works to be Executed without Prescribed Designs.

Wood Carving.

(*a.*) *Human figure in alto or bas relief. Animals or natural foliage may be used as accessories.* 1st prize of £25 and the Society's Silver Medal. 2nd prize of £15. 3rd prize of £10.

(*b.*) *Animal or still-life. Fruit, flowers, or natural foliage, may be used as accessories.* 1st prize of £10. 2nd prize of £7 10s. 3rd prize of £5.

(*c.*) *Natural foliage, fruit, or flowers, or conventional ornament in which grotesque figures or animals may form accessories, preference being given where the work is of an applied character for ordinary decorative purposes, as representing commercial value.* 1st prize of £10. 2nd prize of £7 10s. 3rd prize of £5.

(By Order)
P. LE NEVE FOSTER, *Secretary.*

Proceedings of the Society.

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Eighteenth Ordinary Meeting.

Wednesday, April 20th, 1864; Sir Thomas Phillips, F.S.S., Vice-President of the Society, in the chair.

The following candidates were proposed for election as members of the Society:—

Gatliff, Charles, 19, Coleman-street, E.C.
Heinrich, Johann, 36, Lower Kennington-lane, S.
Stokes, Charles, 65, Brook-street, Hanover-square, W.

The following candidates were balloted for and duly elected members of the Society:—

Bourne, Stephen, Examiner's-office, H.M. Customs, E.C.
Croskey, Joseph Rodney, Warwick-house, Maida-hill, W.

Lawson, Archibald Scott, 1, John-street, Bedford-row, W.C.

And as Honorary Corresponding Members.

Lancia di Brolo, Le Duc, Palermo.
Venturini, Le Commandeur Charles, Ancona.

The Paper read was—

ON THE PATENT LAWS.

By Thomas Webster, M.A., F.R.S., Barrister-at-Law.

The Council of the Society having suggested that a discussion on the Patent Laws might be of service during the present session, I have much pleasure in preparing a communication for the purpose of facilitating the full consideration and discussion of the subject.

It is one of the peculiar characteristics of this ancient Society—the first and for a long time the only representation of practical science—that its comprehensive character permits it to take the lead in any movement relating to the Arts, Manufactures, or Commerce of the country. The committee to which "The Patent Law Amendment Act, 1852" is due met first in the house of this Society. Other committees of the Society have from time to time reported on this subject in the years 1850, 1851, and 1852, and the recent communication of the chairman of your Council to the Social Science Association, at its meeting last year, at Edinburgh, is a valuable contribution to the history of the progress of opinion on this subject.

It is not my intention on the present occasion to treat of the general jurisprudence of the subject, by entering on an elaborate discussion of the origin or grounds of the principles upon which property in the exhibition of mind, as embodied in material forms, may be considered to rest. The origin of such property, the grounds upon which it rests, whether on natural right, on policy, or expediency, the protection of such property by laws of the land, without which the name of property is but an empty sound, have been repeatedly treated of.

My object on the present occasion is to treat the subject practically in reference to the general policy of the patent laws, and with the view of ascertaining facts and eliciting opinions on certain questions which the consideration of the policy of those laws involves. That the subject has difficulties peculiarly its own is not to be denied; whether such difficulties may be greatly modified and lessened, if not altogether removed, is one of the questions at issue. Hitherto no attempt has been made to grapple with these difficulties, the provisions for this purpose contained in the Patent Law Amendment Act having remained in abeyance.

Considerable differences of opinion may be expected as to the most appropriate remedies for the admitted grievances, but I believe that should the discussion of the subject be fully exhausted there will be a great preponderance of opinion in favour of the views with which the Patent Law Amendment Act of 1852 was proposed and supported.

In entering on this subject it will be convenient to premise that the real question at issue may be considered under the following heads:—1. Whether inventions should be encouraged and inventors rewarded. 2. Whether any more practicable means of encouraging inventions and rewarding inventors exist than a system of patents. 3. The best means of creating and protecting such property. No one, to my knowledge, has yet advanced so far in liberalism as regards the rights of property or the encouragement of inventions, as to deny or seriously dispute all those propositions. Such heresy, so to speak, has not broken out into open flame, however it may be smouldering, and appear to be involved in the ashes of doctrines which have occasionally been announced, or underlie the surface of opinions which have been advanced, and will come under discussion on the present occasion. The President of the British Association (Sir W. Armstrong), at Newcastle, and your Chairman of Council (Mr. Hawes), in the paper already referred to, give expression to the opinion that the seeds of invention strewn broadcast over the world by the previous investigations of learned men, are published and given to the world, ready to germinate in due season whenever the occasion or necessity may arise, and that legislative interference will neither produce them nor stimulate their growth. This opinion, proceeding from, or endorsed by, such authority has been, and will be, often quoted as condemnatory of all views favourable to property in invention, and in support of the views that invention does not require the stimulus of the reward or remuneration which the Patent Laws are designed to confer. From these premises it is contended that new processes or new mechanical contrivances, derived from information thus freely and gratuitously published, are public property, and cannot belong to those who merely give such knowledge a practical form. But is not this to beg the whole question? Is there not also some confusion arising from the use or imperfection of language? Is a proper distinction always maintained between discovery and invention in reference to these questions? A law of nature, as gravitation, or a machine, as the steam-engine, or a process, as vulcanising, are spoken of indifferently as discoveries or inventions. This confusion of language is fruitful of difficulty in the subject under consideration. We speak of discovering a law of nature, as gravitation, cohesion, elasticity, attraction, heat, atomic theory, equal transmission of pressure in fluids, elastic and inelastic; we discover (Fr. *découvrir*) that which has a prior or actual existence in nature; we do not invent such laws. In the proper sense of the term, invention is more in the nature of creation than of discovery. We invent or find out a mode of doing, that is, of producing a particular thing; every new manufacture is in that sense a creation. To call it a discovery is to introduce a confusion in the use and application of terms; or, to add one further illustration, we speak of the discovery of vaccination and of the invention of the penny postage, neither of which could be the subject of the patent laws. The inventor applies the laws of nature; invention consists in the application of such laws. For instance, Watt's invention of the steam engine was an application of the laws of heat; Dollond's achromatic object-glass, of the laws of light; Wollaston's camera-lucida, of the laws of refraction and total reflection. Vulcanised rubber was a new creation; such a thing had never existed before, the invention consisting in the application of heat and sulphur to rubber under certain conditions. Photography was an invention in the strict sense of the term; such a picture, *i.e.*, a picture so produced, was a new creation, a new manufacture. The self-acting mule, the product of the genius of Richard Roberts, whose loss we so recently have had occasion to deplore, the regenerative furnace of Siemens, the automatic self-recording telegraph, the last production of Professor Wheatstone, the various forms of telegraph or telegraphic cables, may with propriety be called new creations, or, in the language of the Patent Law, new manufactures. Seeing, then, that invention consists in the application of the laws of nature to the matter provided to our hands, and in giving to such laws a practical form, how can it be said that property cannot be acquired in the application of knowledge given to the public? That is the very foundation of the system. The distinction above adverted to is more important than may at first sight appear. The correct and appropriate use of terms is a matter at all times deserving consideration, but especially so when it is the foundation of distinctions in reference to the subject under consideration. Thus, for example, M. Legrand, insisting on the distinction between patent right and copyright, on the incontestible difference between the work of the writer or author of a literary composition and the inventor, says, "If Massillon had not written *Le Petit Carême* no other person could have done it. If, on the contrary, Niepce had not discovered photography, some one else would have invented it. What do we say? Another ha invented it. Daguerre has had the same idea. Artist really create something, they produce work which no other would have produced. In the domain of industry, on the contrary, the inventor is not, properly speaking, any more the creator than he could be the exclusive possessor. He finds; he discovers; but he does not create."* The confusion of the above needs little comment; an idea not carried out is no invention. It is matter of law that a patent cannot be granted for a principle or an idea, but only for its application or embodiment; thus there could be no patent for the discovery of a law of nature or property of matter, unless applied or embodied in a manufacture. In litigated cases the question whether the subject of the patent is a principle or a manufacture, not unfrequently arises. The following observations of a highly scientific and most learned man, Mr. Baron Alderson, are worthy of special attention: "I have always thought that the real test was this, that in order to discover whether it is a good or a bad patent, you should consider that what you cannot take out a patent for must be considered to have been invented *pro bono publico*—that is to say, the principle must be considered as having had an anterior existence before the patent. Now supposing in Watt's case it had been known that to condense in a separate vessel was a mode of saving fuel, then Watt certainly could have taken out a patent for carrying into effect that principle by a particular machine; but then his patent would have been for a machine; and if I invented a better machine for carrying out the principle I should not infringe his patent unless my machine was a colourable imitation."

The distinction now insisted on is little regarded by many who speak of patenting ideas and principles, and derive an argument from the abuse rather than the use of the system, and assume that to be part of the system which by law is illegal.

But it is said that inventors need no such encouragement, that invention is a real pleasure; that true inventive genius labours on involuntarily; that the glory of a great name or the possible reward of a grateful nation is a sufficient stimulus; that the philosopher, physician, and chemist give their results to the public, who appreciate originality of mind, and do not fail to reward it. All this may be true, but it applies to the labourer in the field of discovery rather than of invention. I remember on one occasion, at a meeting at Manchester, when this doctrine was propounded, that Richard Roberts replied: "The patterns of that paticular invention cost me £500; they would have been 'colted' (that is, copied) the next day but for the Patent Laws." The gratitude of the public is soon exhausted when the benefit is reduced into possession.

However great may be the stimulus of the pleasure of invention the advocates of this view would appear to lose sight of or disregard the fact that the invention and the public require adaptation to each other; that the introduction of an invention involving any material change is a constant struggle with the existing state of things, and in a large class of cases is as much an education as the training and introduction of a child; that it is a contest with existing practice, in which contest the inventor has to struggle with all the prejudices, capital, and influence of the existing trade and established manufacture. The history of the struggles of the introduction of new inventions, as detailed on the hearings before the Judicial Committee of the Privy Council in cases of application for the extension of the terms of patents, can hardly fail to produce the conviction that these struggles would never have been undergone but for the expectation of the reward. Many inventions are wholly in advance of the age, and would fall still-born but for the return anticipated on the capital embarked in their introduction. There was, it is said, no patent for paper (A.D. 1200), or for oil (1297), or for glass (1300), or for the mariner's compass (1302), or for printing (1430), or for gunpowder (1450), or for many other useful inventions of world-wide utility, and therefore it is left to be inferred that encouragement to invention or reward to the inventor in the nature of the patent system is unnecessary. Until the wants of mankind or the isolated efforts of mighty minds in the progress of civilization had formed the alphabet, so to speak, or laid the foundation of practical arts, there was nothing out of or upon which the superstructure could be raised. Because skins or the handmade fabric once served for clothing can it be contended that the progress of industry and of the practical arts has not been most materially stimulated by the expectation, however delusive, of reward and pecuniary remuneration?

Books were compiled and written before and without any copyright laws, but does any one adduce this as an argument against the justice or expediency of these laws, the analogy of which to the patent laws can hardly be denied, notwithstanding the distinctions which may be drawn between them? It is said that things belonging to the province of copyright are an embodiment of the individual mind, which no other mind would have made, whereas things belonging to the province of patent right are capable of being made by many minds, of being originated in the same identical form by a plurality of persons—that the inventor has, in fact, only forestalled time, and that it may be presumed that the invention would have been made at some time by some other person, and would certainly have been made so soon as the want should arise—that to infringe copyright is slavishly to imitate, whereas patent right may be infringed without such imitation. The subject of copyright is one specific combination of words, letters, and lines, in this respect similar or analogous to the specific combination constituting a machine, or to elements arranged in a certain order, whereas in many cases inventions may be exhibited in various material forms, carrying out or subservient to one leading idea. Different minds do not hit on the same means for carrying out the same idea or of attaining the same object. Invention is one continuous process of simplification, as the history of invention clearly shows. In cases of copyright the identification is easy, speaking to the eye or the ear, whereas in cases of patent right the identification is sometimes difficult, inasmuch as, to the eye, the material forms may be different. These distinctions point only to the difficulties of the subject, and must be dealt with accordingly; but the principle of property in both is the same, namely, a recognition of right in the product of the brain, as embodied in a material form. Invention being one continual progression, each stage in advance of the preceding cannot fail, in many cases, to provoke the opposition of the capitalist, who may look with little favour on the changes which a great improvement necessitates; his old mill may have to be refilled with new machinery. Again, the capitalist in mind, who can devise an expedient for overcoming any difficulty so soon as it arrives, may not be pleased by finding that he has been forestalled by some other person; that he must respect the property which the law gives to possession, and adopt some other, and perhaps inferior, means of attaining the same end, or come to terms with the owner of that property. Hence, patents have been called obstructive, likened to toll-bars on the highway. Authentic instances of such obstruction would be a great boon, and contribute much to the history of the subject; they have been often asked for, very few have ever been even pointed at. If such exist to the extent contended for, or to any extent, the remedy is very simple—make a license under a patent a matter of compulsory purchase, to be settled by arbitration on a review of all the circumstances of the case. If the owner of land or houses has to restore to the public a portion of the ancestral property acquired from the public in former times, there can be no great injustice in requiring a patentee, on fair and proper terms, to admit others to share in that which he may be regarded as having acquired from the public; in this sense that same other person, it may be presumed, would have made the invention when the emergency arose. The patent might be granted on this express condition, and the effect of such a system immediately tried. But philanthropic and moral considerations are introduced. The system is denounced as a lottery, and injurious to the personal interests of the inventor, who rarely obtains the reward which he expects or to which he may be fairly entitled. Is this not part of the lottery of life? The race is not always to the swift nor the battle to the strong. The very objection assumes an expenditure of time, labour, and money in producing a result beneficial to the public though not to the individual author. Let such an individual be rewarded out of the "Inventors' Fee Fund," the surplus fund to which he has contributed. Let this blot be removed. Let it not be said that a great benefactor to the public has been unrewarded, when ample funds exist of the inventor's own creation, out of which he may be amply compensated. Let it not be said that the name of one of our greatest inventors, just removed from amongst us, Richard Roberts, should be without a national tribute for the emancipation and development of industry of which the self-acting mule was the pioneer, or that the family of the man should be permitted to want in the midst of the untold millions which his inventions have added to individual and national wealth.

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* See "The Patent Question," p. 17, by R. A. Macfie, papers at Edinburgh Meeting of Social Science, 1863.

But the principle of patents is said to be inconsistent with the principles of free trade. Here again, I cannot but think there is some misconception and confusion in the use of language. The theory of the patent law is the creation of a trade, or, as expressed in one of the earliest reported cases, "when any man, by his own charge and industry, or by his own wit or invention, doth bring any new trade into the realm, or any engine tending to the furtherance of a trade, that never was used before, and that for the good of the realm, the king may grant him a monopoly patent for some reasonable time until the subjects may learn the same, in consideration of the good that he doth bring to the commonwealth, otherwise not."* It has been said that these principles are not now applicable; that all trades are established and that the reason does not apply, there being no necessity for the instruction; but such an observation is made regardless of the fact that knowledge and invention are progressive; that if there be not the same ignorance as in bye-gone centuries, there is a special opposition, which our very civilization has created, rendering the special property in an invention the best means hitherto desired, if not the only means, for ensuring that progress which all profess to desire. It may then be assumed, that new trades, or improvements in existing trades, which, for the question under consideration, may be regarded as new trades, are still to be created, and that it is the object of the patent laws to foster inventions constituting such new trade. The fostering care of special property in the invention is continued only for a limited and reasonable period, until the trade shall have been established; during that period the particular trade is not to be practised or special property shared without its owner participating in the proceeds; when that period has expired, the trade, whether established or not, is open to all, with this further advantage that a description of the manner of practising the invention is open to all; the requirement of such a description—called the specification—having been substituted in the reign of Queen Anne, in lieu of a proviso appearing in some private Acts for patents requiring the patentee, during the latter half of the term granted, to take apprentices and teach them the knowledge and mystery of the said new invention.†

The principles of free trade can have no application to a trade which is non-existent or which has to be created. If, as the theory assumes, special property in an invention be essential or materially conducive to the creation of the trade, to prohibit such property is to prevent or delay the establishment of the trade. The supporters of this objection would appear to confound patents for inventions with the exclusive privileges declared to be illegal by the Statute of Monopolies (21 Jac. I., c. 3, A.D. 1624). It is contrary to the principles of free trade to restrain any person from, or subject him to a tax for practising, any existing trade as a baker or brewer, or buying and selling in the cheapest market, but it can hardly be said to be contrary to the principles of free trade to give exclusive privileges for the creation of that which does not exist, for a trade to become free as soon as established.

The real question would appear to be as to the terms or conditions upon which such privileges should be granted, and not to the principle of such privileges. If patents are granted improvidently, there is an abuse of the system; remove the abuse, but do not found on the abuse an argument against the use of a system, unless such abuse is incurable and inevitable.

The abolition or diminution of secret practices, with their long train of attendant evils, has frequently been relied on as an argument in support of the patent system; and the freedom with which the knowledge of inventions is now given to the world, has been relied upon as one of the great improvements due to the passing of the "Patent Law Amendment Act, 1862." This, however, in the able paper of the chairman of your Council on the economical effect of the patent laws, is objected to as inducing the circulation all over the world of the best possible descriptions of our most recent improvements for the benefit of our rivals. Is this generosity really detrimental to our national interests? Can any well-authenticated instances of that detriment be adduced? Isolated cases may exist in which some particular interest may, under special circumstances and for a limited time, be prejudiced. This is a practical test, and capable of proof; and if it should appear that in some few cases the result may be that the foreign manufacturer, by means of such information, may be enabled to compete successfully with the home manufacturer, either at home or in the markets of the world, are not the compensating advantages such as greatly to outweigh or overbalance the supposed detriment? Is such detriment in any respect comparable to the evils of the secret system of the guilds of our forefathers, when art was a mystery and trade a protected monopoly?

Are not the objections, when thoroughly examined, directed to the administration rather than to the principle of the system? Is not the proper course to reform the system, at least to make the attempt?

Time will not permit me to pursue this part of the subject in detail on the present occasion; it may be sufficient to point to the proposals which have been made for removing or mitigating the admitted evils of the present system, and which may be classed as follows:—

1. That patents should not be granted as of course, but that some check should be placed on their indiscriminate issue by a preliminary inquiry and report, by which the applicant would receive the benefit of the accumulated experience of the office of the Commissioners of Patents in consideration of the fees paid.
2. That the validity and infringement of patents should be tried by a judge, assisted by two or more assessors conversant with the subject selected by the parties or by the judge, from a panel provided for the purpose.
3. That the owner of a patent should be required to grant licenses, or to sell the whole right for the benefit of the public, on adequate consideration.
4. That the fees paid on patents should constitute an "Inventors' Fee Fund," to be applied wholly to inventors' purposes, to the reward of meritorious inventors, to the repurchase of patent rights, and the advance of practical science.

DISCUSSION.

Mr. ROBERT WILSON would say a few words on the improvement of the existing patent laws, rather than go into the more abstract question whether those laws were expedient in themselves. For his own part he could not see how they could expect to maintain invention if they deprived it of its reward. In his opinion the first question to be considered was whether they could amend the existing laws: and he thought it possible to do so in many important respects. One great improvement would be to enforce precision in the specification of the invention. It was a condition in every patent that the patentee should within six months file a specification describing his invention, and the manner in which it was to be carried into effect. But how was this complied with? In a large number of cases at the present day patents were taken out, not for things entirely new, but for modifications of existing inventions, and in such cases he submitted the description might clearly distinguish what was new from that which was old. But those who were conversant with the subject knew that such was not the case, for it constantly happened that patentees put in descriptions which did not distinguish clearly the new from the old, but left it to the public to pick it out themselves, instead of saying "the old machine is defective in certain points, and I have introduced a certain improvement," and then described the whole machine, pointing out distinctly the improvement which he sought to introduce and make the subject of his patent. Patentees, however, generally began with an obscure description of the machine as a whole, and then referred to the alteration or modification proposed to be introduced; they so worded this description as to cover any possible combination or arrangement in which this might be carried out. They then waited to see what other people were doing. After a time they attacked some man for infringement, and endeavoured to show that what he was doing was covered by the words of the specification; an action was then brought, able counsel engaged to describe the combination, beautiful models were prepared to exhibit these combinations, an array of witnesses were called to say that such a combination was found in the specification. Such a state of things was most injurious and dishonest, and this could be remedied by compelling every patentee to describe distinctly and clearly the exact nature of his invention. Again, it frequently happened that much collateral and irrelevant matter got into the case—the case went to a hearing before a jury, and the heads of the jury, and even the judge, were so full of the plaintiff's good deeds, as detailed by his counsel, and the defendant's iniquity, that it was next to impossible to divest them of that prejudice. The case went on, perhaps for weeks, and in the end the jury found for the plaintiff. The defendant, no doubt, could and did apply for a new trial, which might or might not be granted, and if it was a case of great importance an appeal might be made to the House of Lords, and after two or three years litigation it might be, and frequently was, discovered that the thing which had been the subject of the contest was not in the specification at all, and had not been claimed as the subject of the patent. In the end it was found that the patent was bad, and the defendant gained the day, but at a heavy expense, a portion only of which he could recover from the plaintiff, and this only if the latter was capable of paying it. Such, he believed, was not an over-coloured history of a great many patents. What was the remedy for this? It seemed to him that it should be the duty of the judge, in the first instance, to see what was in the specification, and what the patentee claimed for his invention. If the patentee had not stated this so distinctly that people could understand what the invention clearly was, and how it was to be affected, the plaintiff should be nonsuited, and the defendant should not be called upon to defend himself. He would give a case in illustration of this. It was well known that litigation had been going on for a long time relative to the patent rights of a certain sewing machine. A gentleman, of whom he desired to speak with all respect, had purchased the patent rights in a certain sewing machine in America for £50, and this of course he had a right to do, and, if the patent were good, to have the benefit of it. An action was brought against his (Mr. Wilson's) client for infringement, and the plaintiff was nonsuited. He then brought an action against the same party before another judge, and at the end of six days the special jury, not being able to agree upon a verdict, were discharged. The same plaintiff then brought another action, which lasted three or four days; and at the end of that time the defendant, though advised that the patent was bad, was induced to submit to a verdict on certain terms. The plaintiff having so far succeeded, then attacked every one who he considered was infringing his patent, and filed a separate bill in Chancery against them, somewhere about 130 separate Chancery suits. An application was made to one of the Vice-Chancellors to consolidate this litigation, and to decide the case in one trial; but this was refused, and if it had not been for the Lord Chancellor, who would not allow such a scandal to be perpetrated, there would probably at this time have been 130 suits in Chancery going on on this matter. The Lord Chancellor, however, insisted upon having the whole thing tried in one suit before him, and at once called attention to the specification, sitting day after day in order to give the plaintiff's counsel full opportunity of showing that what was relied upon was covered by the specification. It turned out, however, that the invention claimed was nowhere to be found in the specification at all, and the Chancellor upset the patent. These facts went to show the necessity for explicit description. There was, however, another matter to which he desired to draw attention. When the defendant in a patent case put in his pleas he was bound to deliver a statement of his objections to the validity of the patent. Those objections generally consisted in the recital of a mass of specifications of a number of other patents alleged to have anticipated the invention in question, and counsel had to sift from this mass of matter what was really of value to the case, whereas the defendant should be required to point out and define what particular parts of these specifications he relied on for his objections. There was another point to which he would refer, and this affected the principles on which a patent was granted. At present a patent was granted for any new manufacture. If a man took out a patent for a machine that would not work, or for a candle that would not burn, the patent was void, because they were not manufactures at all; but suppose a man took out a patent for a machine which would work, or for a candle which would produce light, he apprehended the patent was in itself good, though the machine might be less effective, or the candle less brilliant, but at the same time more costly, than those formerly in use. In other words, the patent law required absolute and not relative usefulness. He could not conceive on what principle a man should have the right of shutting out other people for three, seven, or fourteen years, unless the invention conferred some benefit upon the nation by publishing it. Therefore, he contended, a change was required in the principle of the patent laws from novelty to actual merit. He thought it would be found it was not impossible to work this out. Suppose they had first of all the application for the patent as it was at present: the patent would date from that time. Then suppose the specification was filed: then the third stage would be the sealing of the patent. At this stage the specification would have been printed in detail, and the patentee should then make a formal application for the sealing of the patent, and this might come on to be heard in public before the new Patent Court, or some such tribunal, and the patent could be sealed or not after hearing all that could be urged in favour or against it, and thus an immense amount of rubbish would be got rid of, and people would be more careful in applying for useless and obstructive patents. This plan would effect what had been suggested in the paper, viz., a preliminary investigation, the only difference being it would be done publicly instead of privately, avoiding proceedings liable to much abuse. At the same time he would reserve the right of appeal to a higher court, although under such circumstances he thought the appeals would not be very frequent. Such a proceeding would be very analogous to the applications made to the Privy Council for a prolongation of the term of a patent. It had been objected to this course that a poor inventor would thus be led into litigation before he could have made anything by his patent. The answer to that was that there was no reason why it should cost the patentee anything. He might go before the lower tribunal, or even the Privy Council, and describe his patent himself, then there would be no cost. Then it might be said that a proceeding of that kind would shut out many good patents and let in many bad ones. It might be said such inventions as gas and the screw propeller would never have passed through such a preliminary investigation. The answer to that was, that when an invention was laid before a body of scientific and competent men it was not likely to be pooh-poohed, if it was a valuable invention. Besides that, the necessity for merit would be less in the case of an invention of that kind than in the case of an invention which dealt with an existing manufacture. If a man now applied for a patent affecting an existing trade, it should be shown that the invention was a good one; but if it did not interfere with others, as in the case of the screw propeller, it might pass with much less belief in its merits on the part of the court of investigation than in the other case, or the hearing might even be postponed, and the patentee might come again. He thought it was impossible to defend the patent laws as they existed, and the system was getting worse. They must either improve this system, which he thought might be done, or make up their minds to give up the patent laws altogether.

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* See 1 Webster, "Patent Cases," p. 6.

† See Act for Bank's Invention, A.D. 1651, c. 2; 1 Webster, "Patent Cases," p. 35.

Dr. Collyer thought the subject of patents admitted of easy and simple elucidation. Men who had money did not, as a rule, devote themselves to invention. To be an inventor necessitated a prior education and intelligence. There were exceptional cases; but almost all the great inventions had been accomplished and perfected stage by stage, and year by year; and those who were most conversant with inventions and inventors, knew very well that invention begat invention, and in the majority of cases it required a large expenditure of money to put them into practical execution. Defects had to be remedied, and it was only after many years that an invention was perfected. At the same time there had been valuable inventions, no doubt, which had not gone through those stages. The steam engine of Watt had to pass through all these stages, and even now improvements in the steam engine were daily going on; and were it not for the protection which the patent laws afforded, very few men would devote their time and intelligence to invention. Many men were called inventors who had no right to that title. A host of patents existed which were the cause of the objections raised so constantly against the patent laws. This would be met, as suggested in Mr. Webster's paper, by a preliminary examination. That plan had been very successfully carried out in America. With regard to the value of an invention to the authors, that could not be anticipated. The value of it could only be determined by the working, after a sufficient time had elapsed. He had himself taken out no fewer that fifteen patents on one subject, and he believed he had now arrived at something like perfection. He would like to see the patent laws revised. They all felt the difficulties that had been pointed out by Mr. Webster, but he would say, as an inventor, he hoped that these difficulties would not deter them from endeavouring to amend the system, and retain the patent laws, to abolish which would be to rob a man of the fruits of his intelligence, honest perseverance, and industry, and be a disgrace to the advancement of civilisation.

Dr. Bachhoffner, as the proprietor of several patents, had no hesitation in stating that the present law was a delusion and a snare. But, though much might be said against the system itself, much more might be said against inventors. The gentleman who first addressed them had given a graphic description of the intricacies of the law. One of the most ticklish things of all was the provisional specification, and next the final specification. He would appeal to Dr. Collyer whether the object of the inventor was not to disguise as much as possible what was intended to be done, and to tell the public as little as possible for fear of infringement. A man might invent, or fancy he had invented, something that had not been invented before, and the difficulty was to know whether any one had invented such a thing previously A cautious patent agent would advise him in his specification not to claim anything specific, but to leave it open to his opponents, if he had any, to find out what he did claim. That was the state of patent specifications generally in this country. He fully concurred in the view taken by Mr. Webster as a fair and proper one, but there were great difficulties connected with it. It had been suggested that there should be a judicial council to investigate the claims to patents; but in the case of a chemical patent, how could a fair decision be arrived at when the process dealt with was an entirely new treatment or combination of chemical elements? If the patent were granted, it must be on the *ipse dixit* of the applicant, and rights would thus be created with possible injustice to others, because a patent when thus granted, to be of any value at all, must be one that could not be overturned. As the law of patents now stood, when an inventor had paid the money for the patent, all he got was the privilege to go to law to defend it. The subject was one which it well became this Society to grapple with—how he scarcely felt competent to suggest—but it was important that something should be done to wipe away this great disgrace from the laws of the country.

Mr. Paul remarked that before they could consider how invention was to be encouraged and inventors rewarded, it was necessary to define what was an invention. No doubt many of the patents granted were not valid, and the majority of them were neither novel nor useful. Mr. Webster in his paper had pointed out what he considered a distinction between discovery and invention. He must say he could not altogether realise the distinction which had been thus drawn, and he regarded many patented inventions as essentially discoveries. It was difficult to assign to each particular individual the degree of credit that belonged to him, and that remark applied to almost all the subjects for which patents could be obtained. As the knowledge of scientific principles became enlarged the area of novel invention became more and more narrowed. That was particularly the case in the matter of chemical patents. It was almost impossible to say with regard to chemical patents where the novelty of the invention was, what particular portion of it that was essential to the process was new, and what portion though essential was old. It occurred to him that it might be of great advantage if the character of novelty in these matters were somewhat less strictly insisted upon or limited, so as to admit of retrospective application. In the distinctions drawn by Mr. Webster between discovery and invention, vaccination had been adduced as an illustration of the argument. The novelty as well as the utility of that practice had been established, but yet vaccination was stated to be incapable of reward as an invention; at the same time patents were granted for medicines that were to cure all imaginable diseases. There appeared to him an inconsistency in this. With regard to the reward to inventors and the property in inventions, the inventor was not always the person rewarded by the operation of the Patent Law.

Lord Alfred Churchill, M.P., said that the patent law of this country was in a most unsatisfactory condition, and that amendments in it should be made was almost universally admitted. The great difficulty was to discover the direction in which the amendment should take place. They could not disguise the fact that in the opinion of many persons it would be best that the patent law should cease altogether, but he for one could not admit that, until some other means were adopted for giving a fair reward to inventors for what they produced. The proposition he thought deserving most attention was the third which had been submitted by Mr. Webster in his paper, viz., that the owners of a patent should be compelled to grant licenses, or to sell the whole right, for the benefit of the public, on adequate consideration. Now the very same idea occurred to him, and he had embodied that principle in a skeleton bill, which he had submitted to the consideration of his friends. The object of that bill was that a patentee should not possess an exclusive or obstructive monopoly in the use or manufacture of his invention, but that he should have full claim to a royalty from other persons for making use of his invention. He proposed in this skeleton bill, first, that no monopoly clause should be introduced; secondly, that parties obtaining patents should declare what royalty they considered would be a fair remuneration to them; thirdly, that the amount so declared should be advertised in the most public manner; and fourthly, that at the end of six months or any other fixed period the public generally or any manufacturer should have power to object to that royalty, and that then the amount should be decided by arbitration. He thought if these points were well considered they would find that inventors would obtain ample remuneration. He could imagine no greater misfortune to a man without means than to be an inventor. He knew of thousands of cases in which men had been ruined by their own brains. If they could have the means of placing their inventions before the public in some such way as he had pointed out, with the certainty that they would obtain a royalty proportionate to the value of the invention, they would not be induced to follow the course mentioned by Dr. Bachhoffner of drawing out their specification in such a way that nobody could know the meaning of it. On the contrary, they would be anxious to state the nature of the invention as clearly and fully as possible, in order to obtain the royalty which attached to it. He was glad to find that this idea had been entertained by Mr. Webster, and he had no doubt that gentleman, with his large knowledge of the subject, would be able to apply it in a practical and useful manner.

Mr. Peter Graham said he would offer one or two observations on the general policy of granting patents. The broad principle to be considered was this, viz.—whether the granting of patents conduced to the progress and improvement—and thereby to the benefit—of the public? It had been lost sight of so far, that something more than mere invention was required—it had to be brought into practical use. An invention was often attended with many trials and difficulties, and in some cases thousands of pounds were expended before any practical results were arrived at. Men would not be foolish enough to waste time and risk capital unless there were some chance of ultimate advantage from it. Hence, he contended that the principle of the patent law was just, and tended to progressive improvement and public benefit. With regard to the application for extension of the term of patents, he thought this was necessary; when a man brought forward a new invention, affecting an established manufacture or trade, he had all prejudices to contend with before he could bring it into use, and unless he was in a position to carry it out himself, he must find persons willing to bring it forward, and great sacrifices were frequently necessary for this end. He recollected when the power-loom was first adapted to the manufacture of Brussels carpets. The inventor in the first instance took it to Kidderminster, the great seat of that manufacture. The answer given by the manufacturers was, first, that they did not believe that it was practicable, and secondly, if practicable, that they did not desire any change or improvement in the carpet manufacture. In another instance, in which an ingenious man invented a new thing in connection with the same branch of manufacture, it was agreed to put the thing to work, but the parties afterwards paid the forfeit of £200 and gave it up. However, the invention was subsequently applied by the inventor himself, and it had been the foundation of one of the most colossal manufactures in this country. Would any one tell him that the inventor would have spent his time and money in that way if his invention had not been protected by a patent, and if he had not had anticipations of reaping the reward of his invention? With regard to the means of obtaining patents, he thought at present they were obtained with too great facility. The suggestion of Mr. Webster, with reference to that point, was a good one; but with regard to Mr. Wilson's proposition, he did not think it practicable, for a poor man would not have the time and money to do it, and, as had been remarked by a previous speaker, rich men were not generally inventors. They found capital to perfect the inventions of others, but they were not the real inventors. They had large manufactories or warehouses, and they were, in many cases, content to continue as they were, and did not encourage inventors to come amongst them. No doubt thousands of patents were perfectly useless, and in like manner there were a great many laws on the statute books which might be abrogated with benefit to the community. He thought the suggestions of Mr. Webster for the improvement of the patent laws were valuable. He thought the public, and particularly the Society, were indebted to that gentleman for the manner in which he had brought this subject forward. He agreed with every principle laid down, and with every opinion expressed in the paper, having for the last twenty years had much to do with many patents.

Mr. Wm. Hawes said at present the discussion had gone entirely in one direction. Nearly every gentleman had, to a certain extent and in various degrees, supported the present system of patent laws, or rather the principles on which they were based. He would in the first place reply to the observations in the very able and modest paper of Mr. Webster, because that gentleman, while criticising severely the arguments contained in a paper which he (Mr. Hawes) read before the last Social Science Congress at Glasgow, he had done it so in so agreeable a manner as to make it a pleasure rather to hear himself criticised than to raise a word of complaint as to the manner in which the freedom of criticism was exercised. They must allow him to say that he thought the paper they had just heard grappled with only a small portion of the subject. Mr. Webster treated the patent law as an inventors' law only. He did not touch the patent law as a public law, affecting public and national interests, but he had laid down the propositions that invention was entitled to protection, and that there was a property in inventions; and having stated these two propositions he went on to defend them, and to show how that property should be protected and how that principle was to be supported. He (Mr. Hawes) would not gainsay that there was a property in invention, but he would say the patent law by which they attempted to maintain that property was injurious to the nation, was not on the whole beneficial to the inventor, and led a larger number into difficulty and ruin than to fortune and success. Mr. Webster had drawn a very interesting distinction between invention and discovery. It was a distinction which might be drawn in a paper of this kind, read before an intelligent body of men, but it did not apply to the great practice of the world. It was impossible by law to define the difference between invention and discovery, and so long as there was that undefinable difference there would always be great difficulty in practically separating them, and in maintaining that some of the greatest discoveries were not inventions; for what discovery did more good, or had saved more lives, than the discovery of chloroform? and yet the men who discovered that agent, by the rule now laid down had no right to reward or to have their services acknowledged by the nation. He said it was taking a wrong view to endeavour to establish such a distinction. They could not maintain it in practice, and it would confuse instead of elucidate the question. It was a distinction without a practical difference, which he could not admit as applicable in this case. Reference had also been made to the protection afforded by copyright. He was told that the copyright protected one man only and one work only, whereas the patent right went beyond that, for it not only protected the inventor but protected his machinery and property, and prohibited others from using that machinery and property without his leave and license. But a book, a picture, or any artistic work was only so far protected by copyright as to secure the individual producing it against the exact reproduction of that which he had produced, and the world was allowed to benefit by that work, and to use it as they pleased, improving upon it, using the same materials or arguments, so long as they did not copy or sell that which was an exact copy of another man's mind. There was protection to intellect, and property in it, and when they went beyond that, and prevented men applying any portion of a previous invention without the leave and license of the patentee, they did an injury to society, they obstructed progress, they increased the cost of production to the public, and delayed rather than increased the progress of invention. These distinctions were worth bringing forward by the author; they were interesting, and deserved consideration; but they did not meet or grapple with the real question—What was a patent? what was it granted for? for whose benefit was it granted? and did it do good or harm materially? A patent right was a monopoly; it was a remnant of the laws of olden times. It gave a man a right for years, to the exclusion of all others. It prevented other men from using, by directly improving upon it, that which another had invented. It was originally intended, no doubt, for the benefit of the individual, and not for the benefit of the country, for the registration of specifications was originally intended to prevent the loss of inventions, or the means whereby new things were produced. He disputed the principle on which patents were founded. He repeated that it was for the benefit of the individual that certain restrictions were enforced, and not for that of the country. For instance, the registration of the specification was considered to be for the benefit of the patentee as well as of the public, and as the best means of perpetuating the discovery. The principle on which that registration was founded was not applicable to the present time. Every patent law was a prohibition to the world. When a specification was taken out, it was not, he apprehended, with a view of concealing the object, but rather of announcing the discovery to the world. It was a publication of what had been done, but which the inventor's own countrymen could not use without his license, though the rest of the world might use it without any charge whatever. His friend next him (Mr. Graham) reminded him that the patent might be taken out abroad. They might take it out in many countries, but what check was there against the use of it compared with that in our own? Some few patents were secured abroad, but with the great mass very little good was done to those who invested their money in foreign patents. The evil of the publication of specifications in the present time was that it was the means of assisting our rivals abroad gratuitously to that for which we obliged our own countrymen to pay a royalty, so that while we sent them our inventions broadcast over the world to be used in other countries by our rivals, without payment, we taxed our own industry. Was that just to ourselves, and was it the means by which the patent law upheld the great manufactures of this country, and rewarded inventors? He said not only was the patent law injurious, but it was also detrimental to the progress of our own manufacturers, because it held out a premium to the manufacturers abroad to reproduce our best productions. Look at it in another point of view. What was the number of patents taken out annually in this country? There were about 3,000 new inventions patented per annum; this had gone on year by year since 1852, so that between 25,000 and 30,000 patents had been granted during the last ten years. Where, then, was the progress of discovery by which they could mark the beneficial effect of these 25,000 or 30,000 patents? What was the cost of them? A million of money had been paid in official fees. How much more would have been paid in law to protect them, if each had had to be defended in 150 Chancery suits, might be more easily imagined than correctly stated. There could be no doubt litigation was a matter which added considerably to the charges for those patents. Then how did they test the results obtained from these 30,000 patents during the last ten years? If they looked to the Jurors' Reports of the Exhibition of 1862—not the opinion of one or two of them merely—but of nearly all, they would see the opinion expressed that the results of new invention in the previous ten years were not such as might have been anticipated, notwithstanding the large number of new patents taken out. That was the result of a million of money spent on patents; that was the result of investments, many times greater, in the experiments, labour, and machinery required to justify taking out a patent, and in law expences to defend them. Then, to go a little further, let them look at the amount of property in these patents. He had said on an average there were 3,000 patents taken out annually. There were 3,200 patents taken out in 1862. Of these 3,200, 1,200 died a natural death before having arrived at the great seal, £5 in fees, besides other expences being paid on each. That was the first instalment under this law—1,200 out of the 3,200 were not considered worth the £20 to secure the first step. The expenditure on these 1,200 was all lost. That left them 2,000 yet to be dealt with. Of that number only about 550 paid the £25 necessary to get an extension for three years; therefore there were about 1,500 of the 2,000, every one of which was impeding progress, and was a fetter upon some other genuine inventor; 1,500 sank and died rather than pay the £25 to continue the protection for three years. Then what became of the other 550? £50 must be paid at the end of the third year to continue the protection for seven years, and only 100 got to that stage, so that out of the whole 3,200 patents the full fees were only paid upon 100 for the extension of the exclusive right for another seven years. If they wanted stronger facts than these to prove the absurdity of the Patent Law they had only to look at the records of the Patent Office to satisfy themselves that whatever of good there might be in the principle of patents, it was not to be found in the patent law as it existed in this country, but having these facts what could be said in support of protection to property in patents, if only 100 out of 3,200 were worth £100 at the end of two years. We might be told that the argument he had used, that they were beneficial to foreigners while useless to ourselves, was of little value, because inventors might take out patents for foreign countries. That appeared at first sight an answer to the argument, and he was asked by Mr. Webster to show them an instance in which an invention of this country had been used to our disadvantage abroad. How could his friend expect him to show an instance of that kind? All he could say was if the patents were so useless to foreigners that they rarely or never used them, when they had no fees or law expenses to pay, when they could get them without labour, without anxiety, without taxation — if they were useless to them what use could they be to this country? If these patents were of so little value that they might be thrown broadcast among our great manufacturing rivals all over the world, could they believe the maintenance of the law under which they existed, and which involved taxation of the public to a great extent, and which pretended to foster invention and reward the inventor—could they believe it was of much service to this country? Let them look at the reward it gave to inventors—how was it tested, where to be found? Every speaker had referred to the losses which inventors encountered. It was notorious that the great bulk of inventions had not rewarded the men who had produced them. Undoubtedly men had been rewarded who improved upon the inventions of others. The men who invented the beautiful dyes from a waste and almost noxious product — the two distinguished men who discovered the existence of those dyes, never received a penny for their services; while a comparatively obscure chemist — a man having no right whatever to claim reward for the invention—took out a patent founded upon the skill and research of Faraday and Hofmann, and that man and others were making large fortunes from the results of the labours of those two great philosophers. He said, as against the country, that right ought not to have been granted. Then Smith, the inventor of the screw propeller, was not adequately rewarded; others had benefited largely by additions made to that great discovery, but the man who devoted his life to the subject got nothing for his patent. There were plenty of patents, extending over a long range of inventions, which had not been profitable to the patentees, which had, on the contrary, ruined the inventors, whilst the rewards had been reaped by a class of men who did not deserve the name of inventors, who would succeed whether they had patent laws or not; but who, out of a bad protective system, had derived large fortunes, and, therefore, were the supporters of these laws. The same language might be used with regard to the great originator of the Penny Postage; and the corn laws were at one time regarded as necessary for the protection of the interests of the British farmer; but he would say the abrogation of the patent laws, instead of defeating invention, would be a great stimulus to it, and they would never, under the present law, do so much for this country or for individuals as they would by allowing every man to win the laurels earned by his own brain, and allowing the country to reward him for his labours. They did not find that the philosophers, the physicians, the surgeons, or the great artists and authors of this country, were deterred in their career of usefulness or of invention by want of patents; yet they were not wanting in discovery, which they applied to the benefit of mankind at large. No country possessed greater philosophers, greater physicians, greater surgeons, or greater artists than this, from Sir Humphrey Davy down to Faraday and Hofmann, and yet all had worked on without the stimulus of the patent law. This was his view of the patent law; but while he was entirely opposed to the present law, he did not say there should not be some system by which real inventions, such as those of Rowland Hill, Smith, Hofmann, and James Watt, should meet with some reward. He believed there were means to be discovered by which great inventors and great inventions—he did not mean mere additions and changes bit by bit, which he did not call inventions—might meet with a suitable reward. Means might be found by which great inventors—men whose genius led them *con amore* to pursue researches for the benefit of mankind—might be honoured as well as rewarded, and to that extent he desired to reward invention and the individual talent which had led to invention. He would in a few words just call attention to the extraordinary arguments that were used in support of the views that were brought forward by various speakers. They were told that the best mode of remedying these abuses was to have a committee of experts, to whom all inventions were to be submitted, by whom it should be determined whether a patent should be granted or not. Would a man who knew anything about inventions submit to have his plans tested by those who were in arrear of him? because the essence of invention—the position a man placed himself in as an inventor, implied that he had more knowledge than his neighbours, and was in advance of the experts to whom it was proposed to submit his invention; and, taking mankind as it was, a man who was an inventor, and was in possession of a new principle, would be unwilling to submit it first to such a body of men and then be found to give up his idea because those men said it was not new, or it was not likely to be a profitable patent. An inventor must be a man in advance of his age, and yet he was to be asked to submit his plans to those who were behind him, and who, perhaps, could not thoroughly estimate the value of the new principle brought before them. Let them imagine Mr. Winsor, the inventor of gas-lighting, submitting his plans to those who would have been the experts upon public lighting in that day—the great oil merchants—and asking them to decide whether gas was capable of giving as much light as the old oil lamps. Did they think they would ever have had gas? In 1814 the idea was ridiculed of passing gas along the streets in pipes like water. Then again, the idea of submitting to such a body the question whether a wheel should have 20 instead of 30 cogs, or a particular fix of gearing — it was nonsense to call that invention—or whether a lever should be 10 inches long instead of 16? or whether a sewing machine should have one shape of needle instead of another, or this or that kind of stitch?—to call those inventions was an absurdity and an abuse of terms. Patent right, if he understood it rightly, was to protect that which was entirely new and useful—not to protect those things which were a necessary consequence of the application of a man's ingenuity with hundreds working at the same thing day by day. There was one remark of his friend (Mr. Graham) he must notice, that was with respect to the reluctance of great manufacturers to encourage new inventions in their own branch of trade, and he illustrated his view by one case in which the inventor brought his own designs into operation and made a large fortune thereby. His friend also said that very rich men never troubled themselves about new inventions, but he would say if there was one man in the metropolis more ready than another to advance capital in the promotion of a really good invention, that man was his friend Mr. Graham, and he thought that was the best answer to his friend's argument. The inventor must have a capitalist with him, because it was said not to be in the nature of things for an inventor to be rich. Many great inventors were comparatively poor men. Roberts, the inventor of the self-acting mule was a poor man; and probably a few days hence this room would be appropriated to a meeting for the purpose of providing a subscription for his daughter, who was left in bad circumstances. His principle was if there were inventors—if they acknowledged them as such, they ought to find some means by which their talents should be acknowledged by a grateful country; but he did not apply that observation to a host of men who had no right to the protection which they sought, and he denounced the present system as untenable upon any sound principle.

Mr. Newton Wilson expressed a hope that as there were many gentlemen present who were desirous of speaking on this subject, the Council would consent to the discussion being resumed on a future evening, and he therefore moved that the discussion be adjourned.

Mr. Spencer thought there was a great mistake in the nature of this discussion. They were going into details, and no one looked at the great principle at stake. Sir William Armstrong, the *Times* newspaper, and all who advocated the abolition of the patent laws, went into matters of detail, which, when investigated, came to this, that the patent laws were not carried out as they ought to be; that patents which ought to cost only £5 cost £100; and that the large sums annually expended on that account were owing to so-called inventors being allowed to protect their inventions. He thought that was wholly beside the question. He thought, with all deference to Mr. Hawes, that he entirely misapprehended the question. He did not think they could judge from facts, for facts had been wrongly applied, because wrongly brought about. If they had an institution so badly conducted as to check invention rather than encourage it, and from thence it was argued that the patent law was wrong, he thought that was no argument whatever. He (Mr. Spencer) considered there was a right in the individual as well as in the public? There was an undoubted property in invention. Mr. Hawes said he appreciated the inventor, but could not appreciate the man who went on step after step in the improvement of an invention. He would refer that gentleman to his own case of James Watt, and he asked where would have been the splendid results now realised in our great commercial steam marine if there had been no improvements made upon Watt's discovery and invention? Where they to keep the ashes of the dead for hundreds of years and say that no benefit should accrue to the man who brought the results of improvements before the public? What was the test of the value of an invention? It was the benefit the public got from it. If they could now get the same amount of horse-power from an engine with 3 lbs. of coal that Watt got with 8 lbs., he thought that was a *bonâ fide* advance, the merit of which was due to later invention. But that was attained step by step, and yet this was what Mr. Hawes had depreciated. He thought in the matter of property in an invention there could be no misunderstanding. A man having a small cottage was as much protected in his rights as the man of large estates. He said if a copyright was allowed, and if a man was allowed to print his thoughts, and give them to the public as his own, the man who invented ought to be allowed to do the same; and of the degree of merit in invention he did not think they were fair judges. If such a Board as Mr. Webster had suggested had existed, nineteen-twentieths of the present patents would not have come into existence. He was not arguing so much upon the present state of the patent laws as the state they might be in if the suggestions of Mr. Webster and others were carried out. That was the question now before them. It was the question whether individual right was to be respected—whether a man had a right to hold his own invention as a property. If not, what was the use of discussing the matter? He held that on every ground there was a right. The man who invented had a property-right in the thoughts he had worked out into a practical form, and unless that right were accorded, invention would go down. They were arguing as if capitalists were the most liberal and appreciative class of men—as if their language was, "Come to me with your invention, and I will pay you handsomely for it;" whereas he believed the rule was (though there were noble exceptions), "I will get as much as I can for myself, and will pay as little as possible for it." So far, therefore, from holding the views of Mr. Hawes, that invention would go on better, he believed it would not go on at all. He spoke as a patentee himself—one of the step-by-step men. He had spent his life in doing certain things, and he believed he had done good in a small way; and if inventors did not look for money reward, they looked for large results in another way. But it was the case with some men that the genius of invention was within them and it must come out, and when it came out they were justified in keeping it to themselves up to a certain point. If they admitted that a man's thoughts were beneficial to the public, he had a right to the same protection, that he might receive the value of them in return, as he would receive in the case of his cottage or his houses and lands.

The Chairman announced that the discussion was adjourned to the next meeting.

Proceedings of Institutions.

Banbury Mechanics' Institute.—The report of the secretary, adopted at the half-yearly meeting on Tuesday, 22nd March, states that the Institute has never been in a more flourishing condition, whether reference is made to the attendance in the news-room, the circulation of the books, or the subscriptions of the members; the number of the latter being greater than on any previous period. The prizes offered by the committee for the 1st and 2nd best essay on physical education, and the first crusade, called forth nine competitors, four for physical education, and five for the first crusade. The adjudicators deemed it advisable to withhold the first prize in one case and the second in the other, awarding only a first prize for the first crusade, and a second for physical education. Mr. Whitehorn was the writer of the successful essay on the first crusade, and Mr. A. Buller of the one on physical education. The committee regret the continued want of interest manifested by the members in entertainments. The public readings have not this winter been given so frequently as in former seasons, in consequence of other societies catering for the public in a similar manner; but they have been a decided success whenever given. Throughout the past winter a chess club, in connexion with the Institute, has held bi-weekly meetings.

Llanelly Mechanics' Institution.—A fine collection of geological and mineralogical specimens has been presented to this Institution by Earl Cawdor, and they are now being classified and arranged by Mr. F. Bodkin. Mr. Bodkin recently delivered two lectures on geology and mineralogy, having reference more particularly to the collection at the Athenæum, specimens from which were handed round to the audience. The chair on both occasions was occupied by the President of the Institution, W. H. Nevill, Esq. At the close of the second lecture a vote of thanks to Mr. Bodkin was moved by Mr. Buckley, and seconded by Mr. R. T. Howell, and in putting it to the meeting the chairman expressed how much pleasure he had derived from Mr. Bodkin's lecture, and referred to the great difficulty of arranging the large collection of specimens so liberally presented by Earl Cawdor. These specimens were all valuable, and had been arranged by Mr. Bodkin, and he most cordially agreed in the sentiments of the mover and seconder that the thanks of the meeting were due to Mr. Bodkin. The motion was then put, and carried with applause.

Fine Arts.

New Fresco.—Mr. E. M. Ward, R.A., has recently completed another picture for the decoration of the walls of the palace at Westminster, one of the series of fresco paintings for the execution of which he holds the royal commission—the landing of Charles II. at Dover on his restoration to the English throne. This picture has been painted in the new water-glass medium.

Manufactures.

Chatham Dockyard Machinery.—The Lords of the Admiralty have sanctioned an expenditure of between £16,000 and £17,000 for new machinery at Chatham Dockyard, the whole of which is to be forthwith erected. The new machinery ordered includes a hydraulic press of a new description and of a size larger than any now in use at either of the Royal dockyards, for bending the 6-in. and other iron plates intended for the *Bellerophon* and *Lord Warden* iron-cased frigates. Four thousand pounds is also to be expended in the erection of six additional overhead travellers beneath those sheds where the iron vessels are to be built, to be used in armour-plating the ships. They have also decided on laying out £10,000 in the erection of new and improved spinning and other machines in the rope-making establishments at Chatham Dockyard, where the largest cables are now manufactured by steam.

Preventing Incrustation in Steam Boilers.—Mr. W. C. Page has put forward an invention which is to prevent the sedimentary deposits in steam-boilers from forming a hard crust at the bottom and sides, and also to remove such incrustations when formed. To this end he employs a solution prepared by heating together, in an iron pot, creasote, or any vegetable, animal, or mineral oil, with chloride of ammonium, carbonate of soda, caustic soda, or potash, or any soluble chloride of carbonate, in the proportion of about 16 ounces of creasote to one ounce of the other alkalies mentioned. The solution thus prepared is introduced into the boiler through the feed-pipe or otherwise; about one pint to each horse-power being sufficient for about eight weeks; at the end of this time the boiler is blown off from the bottom, and fresh solution added. After continuous working for some months, the only operation necessary is to blow off the boiler and remove the sediment by hand. When the incrustation has already formed, the solution is introduced into the boiler; it is then put into use for two or three weeks, and the deposit, which was hard before, can now easily be removed by hand. The composition may be made either liquid or solid.

Clarifying Wines.—The number of eggs employed for this purpose in Paris alone is stated to be about four millions and a half. By this means a wholesome and nourishing article of food is taken away from public consumption, and its price considerably increased. To avoid this, certain kinds of powders are now beginning to be employed, by which wines may be clarified with equal facility and at a smaller expense.

Agricultural Show in France.—The agricultural Show of the Loire district is to be held in the first fortnight of May, and the landed proprietors of that and the adjoining departments have taken the opportunity of inviting all makers of steam ploughs to compete for prizes in money and medals offered to the successful competitors by them and the Minister of Agriculture. The ploughs are required for deep ploughing, ordinary ploughing, cultivators, grubbers, &c. The prizes are three in number; the 1st prize is £100 and a gold medal; the 2nd, £80 and a silver medal; and the 3rd is £40 and a bronze medal. Besides these there is a fund of £160, to be divided equally between foreign exhibitors, towards payment of their expenses, and the French railways will carry their implements at half-price. The ploughs are required to be on the ground by the 27th of April, and the trial will take place from the 28th of April to the 7th of May inclusive. The place of trial is Roanne, in the department of the Loire, about twelve hours' journey from Paris by the Lyons railway. A jury will decide on the merits of the competing ploughs. This jury is composed partly of French and partly of English members, the English being Messrs. Wilson, Fisher Hobbs, and T. J. Thackeray. The object of the competition is to introduce steam ploughs into the department of the Loire and the adjacent departments, the ordinary ploughs having been inefficient for the stubborn soil of the country.

Commerce.

Cotton from China.—The following is the export of cotton from the China seaboard from January 1st to February 11th. For Liverpool from Hong Kong, the *Kohinoor*, with 7,958 bales; the *Dolfijee*, with 2,676 bales; the *Cornelia Hendrika*, with 3,456 bales; the *Devonshire*, with 9,368 bales; the *Bella*, with 4,274 bales; and the *Norwood*, with 4,000 bales. For Liverpool from Shanghai there had sailed the *Spirit of the Times*, with 5,840 bales; the *Veloz*, with 4,072 bales; the *Ralston*, with 3,841 bales; the *Alice Painter*, with 4,343 bales; the *Queensberry*, with 4,368 bales; the *Thomas Royden*, with 5,892 bales; the *Isabella Hercus*, with 3,840 bales; and the *Constantia*, with 3,642 bales. For London from Shanghai we have the *Strathallan*, with 4,123 bales; the *Lansdowne*, with 4,577 bales; the *Oliver Cromwell*, with 3,300 bales; the *Oithona*, with 5,479 bales; the *Wagoola*, with 4,232 bales; the *T. Dryden*, with 3,185 bales; the *Annie Archbell*, with 4,500, bales; the *Alchymist*, with 4,662 bales. From Yokohama the *Vampire*, with 300 bales, had sailed, and from Kanagawa, the *Forerunner*, with 4,728 bales, and the *Alexandra*, with 4,538 bales.

Coal in the Punjaub.—A vein of coal or lignite, said to be inexhaustible, has been opened in the Punjaub. It has been tried by the Punjaub Railway Company for its locomotives, the chief engineer pronouncing favourably on it. The discovery has caused considerable interest in the Punjaub; for if it prove to be, as it is described, of a quality equal if not superior to that found in Bengal, it will secure the profitable working of an extension of the railway. The discovery of this vein has been made about 150 miles northward from Lahore, on the banks of the Jhelum, a little to the west of the ordinary road to Peshawur.

Wine Statistics.—The quantity of wine imported into the United Kingdom in the year 1863 was 14,186,189 gallons, whereof 5¾ millions were red, and nearly 8½ millions white. Compared with the supplies in 1862 the above total is 2¼ million gallons in excess, of which Spain contributed 1,350,913 gallons, Portugal 546,394 gallons, and Italy 165,642 gallons. The only decrease of any note is 58,026 gallons from France. In the subjoined table are given the exact quantities imported from each country in the years 1862 and 1863, showing the increases and decreases thereon respectively:—

Countries.	Years ended Dec. 31.		Increase.	Decrease.
	1862.	1863.		
British Possessions—	Gals.	Gals.	Gals.	Gals.
South Africa	49,455	105,165	55,710	—
Other British Possessions	7,987	7,310	—	677
From Holland	314,238	363,857	49,619	—
From France	2,244,727	2,186,701	—	58,026
From Portugal	3,048,491	3,594,885	546,394	—
From Madeira	47,102	39,460	—	7,642
From Spain	5,365,647	6,716,560	1,350,913	—
From Canaries	19,484	10,069	—	9,415
From Italy	211,489	377,131	165,642	—
From other Countries	652,056	785,051	132,995	—
Totals	11,960,676	14,186,189	2,301,273 75,760	75,760
	Increase in 1863.........		2,225,513	

The quantity entered for home consumption last year amounted in round numbers to 10½ million gallons—an increase, in comparison with the returns in 1862, of 675,373 gallons. Of the aggregate, 4½ million gallons were the produce of Spain, 2⅜ millions of Portugal, 2 millions of France, 321,485 gallons of Holland, 276,280 of Italy, 108,951 gallons of British possessions in South Africa, and 2,849 gallons of the Canary Islands. Spain shows an increase of 576,000 gallons, Portugal of 268,243 gallons, Italy of 60,777 gallons, France of 38,355 gallons, Holland of 5,312 gallons; while South Africa and the Canaries have a diminution of 67,784 gallons, and 656 gallons respectively. The total revenue derived from wine imported in 1863 was £1,214,762, an amount beyond that in 1862 equal to £91,159. In 1863 the exports of wine slightly exceeded 2¼ million gallons, or 189,121 gallons more than those in 1862. The average prices in bond in the latter year were:—French, 4s. 8d.; Portugal, 6s. 5d.; Italian, 2s.; and Spanish, 2s. 5d. per gallon; but recently the last-mentioned wine has considerably increased in value. The quantity in bond on the 31st Dec., 1863, was upwards of 12½ million gallons, or 1¼ million gallons more than at the same date in 1862.

Colonies.

Preservation of Meat.—The *Sydney Morning Herald*, referring to the premiums offered by the Society of Arts, says—"The Trevelyan prize of seventy pounds is offered for the discovery of a process for preserving fresh meat better than by any method hitherto employed, applicable to the preservation of meat in countries where it is now almost valueless, so as to render it an article of commerce, and available for stores on shipboard. If any one will thoroughly deserve this prize he will benefit Australia not only to the extent of £70, but to an untold amount. To find out a foreign market for our beef would be to add to our commerce prodigiously. Notwithstanding pleuro pneumonia and drought, our cattle are increasing now at a rate faster than our power of consumption. Last year at one time they fell in price so low as to be scarcely saleable. The price has improved since then, owing to various circumstances, but the multiplication of stock has always a tendency to bring the price down to a point which makes it a puzzle for the stockholder to find his profit. There is, of course, always the last resource of the boiling pot, but a far better resource would be a satisfactory invention for preserving fresh beef. Such an invention would at once establish a permanent article of export of more value than tallow, and would give still greater encouragement and greater security to pastoral pursuits."

Sugar in Australia.—Referring to the premium just issued by the Society of Arts, the *Sydney Morning Herald* states—"A medal is offered for the production and manufacture of not less than one ton of cane sugar, the produce of any of the Australian colonies. That the north-eastern coast of Australia is destined hereafter to produce a large quantity of sugar, we look upon as certain. Queensland, perhaps, will be the chief seat of this industry, but sugar may be grown to a profit within New South Wales. That this industry has not already taken root is owing partly to the *vis inertiæ* which seems to oppose itself to all new enterprises out of the common track, and partly to the steady absorption of accumulated capital in pastoral extension. The wealth that grows out of squatting is naturally invested in more squatting, and there is no prospect for a long time to come of this outlet for surplus investment being closed. It might seem to be equally natural that the profits of agriculture should be invested in more agriculture, and such would have been the case if there had been any such proportionate profits to invest. In some isolated cases it has been so. But, as a general rule, agriculture in this colony has not been so prosperous as its admirers could wish, and more people have been deterred from prosecuting it than have been attracted to it. The bounty of cheap land has been lately applied to give this jaded industry a fresh fillip, but at present not with any distinguished success. Tropical agriculture, however, has always been more remunerative than cereal agriculture, and if the experiment were tried with skill and energy, backed by adequate capital, the coast lands towards the north would pay for sugar far better than our tillage has yet paid in wheat or maize. A gentleman long resident in one of our sugar-growing colonies, who has recently inspected some of the Queensland experiments in sugar growing, has expressed to us the strongest conviction that success is inevitable in this branch of industry if the operation is conducted in the right way."

Growth of Flax.—The *Hobart Town Mercury*, 22nd January, 1864, in speaking of the prize offered by the Society of Arts for the production of flax, in any of the Australian colonies, of a good marketable quality, says:—"It is, however, very doubtful if a bale of Tasmanian flax can be procured, as the whole of last year's crop is said to have gone into consumption. A fine sample of flax, the growth of Tasmania, was sent to the London Exhibition in 1861, and carried off a prize medal, of which the holder is very proud. Much of the crop from which this sample was taken was manufactured into twine and plough-lines, in Hobart-town; and many Tasmanians can boast of having driven their horses at plough in beautiful flax lines, made in colonial rope walks, out of fibre produced from seed grown by their own hands. Flax grows wild in this part of the world, and only requires knowledge and culture to make it a valuable article of export; and it is to be hoped that our farmers will be induced to give increased attention to flax-growing. Seed, however, is a great object in this case, and though a supply of the best quality was received some time since, it is doubtful if a sufficient quantity is now obtainable in the colony." The *Sydney Herald* says:—"New Zealand would seem to have the best chance of producing this commodity, as the flax grows there wild, but hitherto nothing effective has been done to make the article merchantable. Perhaps the large immigration which it is proposed to introduce in the form of military colonisation may have some influence in stimulating this branch of industry. The new settlers must turn their land to some account, and as it is very doubtful whether they will be able to grow wheat at a profit, they may advantageously turn their attention to flax. It is an undeveloped resource for New Zealand, which will be of great value the moment it can be turned to account. In the western states of North America great attention has been paid, during the last few years, to the growth and preparation of flax, and with every prospect that this remunerative branch of industry will be permanently naturalised."

Acclimatisation Society.—An acclimatisation society has been formed in Otago. In Victoria and other Australian colonies such societies have for some time existed, and have proved themselves of unquestionable public utility, and in New Zealand the provinces of Nelson and Southland has each its acclimatization society. They have not as yet done much, but it may be hoped that now something like unity between the three will lead to something being done. If these bodies could achieve only the introduction of the salmon and its acclimatisation they would confer a very great boon on all the Australian colonies. The Taibu River in this province has been specially designated by a competent authority as the most naturally fitted stream for the experiment which exists in New Zealand, and there can be no doubt that the climate of the province is the nearest approach to that of England which can be found here. The provincial council has voted £500 to be applied in aid of any experiment which is proposed to be made under favourable circumstances, and this money, as the superintendent has formerly stated, will be at the disposal of the Otago Society whenever the committee may determine to set about the work.

Notes.

The Royal Horticultural Society has just issued the following announcement:—On the Queen's birthday, Tuesday, 24th May, 1864, the gardens at South Kensington will be opened to the public from 12 to 6, admission, 1s. Fellows may obtain any number of tickets at 6d. each. An exhibition will be held showing the various uses of flowers for the decoration of halls, drawing rooms, balconies, churches and buildings generally, &c., also dinner and supper tables, hand bouquets, garlands, and floral devices of all kinds, for which prizes will be awarded. Provided a sufficient number of works of merit are sent in competition, one prize of £5, 3 prizes each of £3, 6 prizes each of £2, 12 prizes each of £1, and 20 prizes each of 10s., with an unlimited number of honorary certificates will be given. Lady amateur artists and Royal Academicians will be associated with the judges. Spaces for large decorations will be assigned to each exhibitor who fills up a printed application before the 15th May. The objects must remain for two days on exhibition. The swags, wreaths, devices, and garlands, may be composed of cultivated or wild flowers, sprays or leaves, or branches of any description separate or combined. The swags, or garlands, must not be less than eight feet long. Artificial flowers for bouquets, &c., may be used, and with these there is no restriction as to size, and separate certificates given. All objects must be delivered carriage free to the gardens; those composed of artificial flowers on the 23rd, all others before 9 a.m. on the 24th. All the cascades and fountains, and Minton's majolica fountain, from the International Exhibition of 1862, will be played. Three military bands will perform during the day, and assemble to play "God save the Queen" at six p.m.—On the evening of Wednesday, 25th May, the Conservatory of the Horticultural Society will be lighted for the first time, and there will be a Conversazione exclusively for the Fellows and Debenture Holders, who will be received by the President, his Grace the Duke of Buccleuch, K.G. Hours, from 9 till 11, when a military band will perform.

Commissioners for the Exhibition of 1851.—At the last meeting of the Commissioners the Earl of Derby was elected President, in the place of the Prince Consort. This election has been delayed in order that it might be seen how far the execution of the Prince's plans at South Kensington would recover the shock of his death. The sale of 16 acres of land to the Government places the commission out of all difficulty as respects finance.

Designs for the New Museum at South Kensington.—About thirty-two designs and plans have been sent in for competition, and are now exhibited in the royal gallery at the palace of Westminster. They were first opened to the public on Thursday, 21st April, the exhibition having been hitherto limited to members of Parliament. The judges are said to be five, and that Lord Elcho is the chairman, the others being three architects, Mr. Tite being one, and the fifth a painter.

Sir Humphrey Davy.—A committee has been organized at Penzance with the object of raising a monument to the memory of this celebrated chemist.

Action of Light on Honey.—Honey fresh from the comb is a clear yellow syrup, without a trace of solid sugar in it, but upon straining it gradually assumes a crystalline appearance, and ultimately becomes a solid mass of sugar. It has not been suspected that this change was due to a photographic action, but this appears to be the case. M. Scheibler has enclosed honey in stoppered flasks, some of which he has kept in perfect darkness, whilst others have been exposed to the light. The invariable result has been that the sunned portion rapidly crystallises, whilst that kept in the dark remains perfectly liquid. It is thus seen why bees are so careful to work in perfect darkness, and why they obscure the glass windows which are sometimes placed in their hives. The existence of their young depends on the liquidity of the saccharine food presented to them, and if light were allowed access to this, the syrup would gradually acquire a more or less solid consistency and would seal up the cells.

Richard Roberts.—A committee is in course of formation for raising a fund for a memorial to that gentleman, the money in the first place to be applied in making a competent provision for his only daughter, and, if any remain, a bust or monument is proposed to be erected. Mr. Bazley, M.P., has consented to be chairman of the committee, on which the Duke of Sutherland, Lord Alfred Churchill, M.P., Admiral Sir Edward Belcher, and many other gentlemen of influence, have already undertaken to serve. The first meeting of the Committee will take place at the rooms of the Society of Arts, on Wednesday evening next, at four o'clock.

Correspondence.

Royal Academy.—Sir,—It is understood that very little sculpture has been sent in this year for exhibition at the Royal Academy, Trafalgar-square. When the Royal Academic sculptors themselves are not sorry to find excuses not to contribute, there is little marvel that the outside members of the profession are equally reluctant. The rooms, indeed, applied to the exhibition of this art in this building are a national disgrace. If more worthy accommodation cannot be found for sculpture it were better that she should be an absentee altogether, and that the rooms applied hitherto to her disservice should be turned over into the charge of Mr. Farrance, over the way, or some other restaurant of that class, who would be ready, probably, to pay a handsome honorarium to the academy for the privilege of there supplying cakes, ices, &c.. to the weary and thirsty lovers of pictures. The so-called cellar would be much more frequented when applied to this purpose than to its former one. It would be a boon to the lovers of pictures to give them, within the walls of the building, the opportunity of refreshment, and the change would at least be a negative honour to sculpture as sparing her her former disgraces; and, moreover, the sum paid for the above-mentioned privilege might perhaps go towards a fund for eventually building a better *salon*, and providing better accommodation for sculpture herself,—I am, &c., Epsilon.

MEETINGS FOR THE ENSUING WEEK.

Mon. ...R. Geographical, 8½. 1. Mr. Petherick's Report on his Explorations in the Regions of the Upper Nile. 2. Mr. Kirk, "On Fossil Bones from the Banks of an Affluent of the Zambesi." 3. Sir R. I. Murchison, "On the Antiquity of the Physical Geography of Africa."
Actuaries, 7.
Philosophical Club, 6. Annual Meeting.
Medical, 8½. "Clinical Discussion."
R. United Service Inst., 8½. 1. Major Scott Phillips, "New form of Paddle Wheels working under the Counter." 2. Mr. Charles Phelps, "Mont-Storm's System of Breech-Loading.'
Tues. ...Medical and Chirurgical, 8½.
Civil Engineers, 8. 1. Discussion upon Mr. Lloyd's paper, "Description of the Santiago and Valparaiso Railway; with remarks upon Resistances from Curves on Railways, and upon Coal-burning Locomotives." 2. Mr. Jas. Cross, "On the Structure of Locomotive Engines for ascending Steep Inclines, especially when in conjunction with Sharp Curves on Railways." 3. Mr. W. Bridges Adams, "On the Impedimental Friction between Wheel Tires and Rails, with plans for improvement."
Zoological, 9.
Ethnological, 8. 1. Mr. John Campbell, "On the Celtic Languages and Races." 2. Sir John Shiel, on the same subject. 3. Mr. John Lubbock, "On the Danish Coast-finds."
Royal Inst., 3. Prof. Blackie, "On Homer."
Wed... Society of Arts, 8. Adjourned Discussion "On the Patent Laws."
London Inst., 12 noon. Annual Meeting.
Archæological Assoc., 8½. Mr. Geo. Ormerod, "On the Hut Circles on Dartmoor."
Thur. ...Society of Arts, 8. Cantor Lectures. Dr. Crace Calvert, "Chemistry applied to the Arts—Flesh."
Royal, 8½.
Antiquaries, 8.
R. Society Club, 6.
Royal Inst., 3. Prof. Blackie, "On Homer."
Fri.......Royal Inst., 8. Prof. Williamson, "On the Existence of Atoms."
R. United Service Inst., 3. Major Talbot Harvey, "The Progressive and Possible Development of Infantry Drill and Manœuvres."
Sat ......Royal Inst., 3. Prof. Frankland, "On the Metallic Elements."

PARLIAMENTARY REPORTS.

Par.
Numb.
57. National Debt—Accounts.
66 (1). Trade and Navigation Accounts (31st January, 1864).
66. " " (31st December 1863) Corrected Pages.
78. Lighthouses (Isle of Man)—Correspondence, &c.
106. Quit Rents (Ireland)—Return.
111. Civil Services—Supplementary Estimate, Class 7 (Scheldt Toll).
39. Bills—Naval Agency and Distribution.
40. " Naval Prize Acts Repeal.
North America (No. 4)—Communications respecting the Vessel "Gibraltar."
North America (No. 5)—Correspondence respecting Iron-clad Vessels.

Delivered on 10*th March*, 1864.

19. Railway and Canal, &c. Bills (218. Belfast and Central Railway; 219. Crystal Palace New Railways; 220. Dumfriesshire and Cumberland (Solway) Junction Railway; 221. Herne Bay, Hampton, and Reculver Fishery; 222. Hoylake Railway; 223. Kilkenny Junction Railway; 224. Scarborough, Whitby and Staithes Railway; 225. Swansea and Oystermouth Railway)—Board of Trade Reports.
108. Fanning Institute (Waterford)—Return.
Captain Grant (Cooking Apparatus)—Report of a Committee on his claims for remuneration.

Delivered on 11*th March*, 1864.

1. Weights and Measures (Metropolis) Return.
62 (1). Committee of Selection—Second Report (a corrected copy).
70. Salmon Fisheries (Scotland)—Return.
4. Derby County Union—Return.
17. Bills—Election Petitions.
41. Naval Prize.

Delivered on 12*th and* 14*th March*, 1864.

73. Poor Law (Workhouse Dietaries)—Return.
87. Railway Schemes (Metropolis)—Report and Evidence.
55 (2). Railway and Canal Bills—Third Report from General Committee.
62 (2). Committee of Selection—Third Report.
103 (2). Civil Services, Estimates—Class 2.
114. Civil Services (Votes "on Account")—Estimates.
109. East India (Paper Currency, &c.)—Return.
Denmark and Germany (Schleswig and Holstein)—Reports from Mr. Ward and Vice-Consul Rainalls.

Delivered on 15*th March*, 1864.

19. Railway and Canal, &c., Bills (226. North Eastern Railway (Additional Powers); 227. North Eastern Railway (York and Doncaster Branch)—Board of Trade Reports.
103 (6). Civil Services (Estimates)—Class 6.
110. Sugar Duties (Mauritius)—Copy of Despatch.
112. Constabulary (Ireland)—Return.
120. Superannuation (Sir Rowland Hill—Treasury Minutes.
Education (Endowments)—Minute of the Committee of Privy Council.
North America (No. 6)—Correspondence respecting the "Tuscaloosa."

Delivered on 16*th March*, 1864.

12 (1). Population and Deaths—Return.
91. Highways Act—Return.
113. Wick Harbour—Correspondence.
90. East India (Sedashegur Harbour)—Return.
Census of Scotland (1861)—Vol. 2.

Delivered on 17*th March*, 1864.

19. Railway and Canal, &c. Bills (228. North Eastern Railway (Leeds Extension); 229. Blyth Dock; 230. Cannock Chase and Wolverhampton Railway; 231. Central Wales and Staffordshire Junction Railways; 232. Exmouth Docks; 233. Falmouth Docks; 234. Guildford and Leatherhead Railway —235. Irish North Western Railway; 236. Llandilo and Teiffi Valley Railway; 237. Lymington Harbour and Docks; 238. New Brighton Pier; 239. Stokes Bay Railway and Pier; 240. West London Docks and Warehouses)—Board of Trade Reports.
13. Metropolitan Board of Works—Report.
42. Banda and Kirwee Booty—Return.
44. Bills—Intoxicating Liquors.
50. ,, Union Relief Aid Acts Continuance.
Public Schools and Colleges—Report, &c., &c., Vols. I., II., III., and IV.
China (No. 3)—Papers.

Delivered on 18*th March*, 1864.

85. Election Petitions—Return.
89. Lighthouses, &c.—Report to the Board of Trade.
121. Public Parks, &c.—Return.
103 (5). Civil Services (Estimates)—Class 5.
103 (7). ,, ,, Class 7.
116. Union Assessment Committee Act (1862)—Return.
35. Bills—Grand Juries (Ireland).
47. ,, Borough Franchise.

SESSIONAL PRINTED PAPERS.

Delivered on March 19, 21, 22, 23, 24, 26, 31,
April 1, 2, *and* 4, 1864.

19. Railway and Canal, &c. Bills (241. Albert Bridge and Approaches; 242. Bembridge Railway, Tramway, and Pier; 243. Edinburgh and Leith Sewerage; 244. Fleetwood Docks; 245. Millwall Canal, Wharfs, and Graving Docks; 246. Newcastle-upon-Tyne and Gateshead Gas; 247. North Devon and Somerset Railway; 248. Port Glasgow Harbour; 249. Tralee Canal; 250. Victoria (London) Docks; 251. Wandsworth and Fulham Bridge; 252. Waterford and Wexford Railway and Rosslare Harbour)—Board of Trade Reports.
88. Ecclesiastical Commission—Copy of Two Reports by Estates Committee.
126. Malt and Beer—Returns.
128. Lunatic Paupers—Return.
129. Registration of Works of Literature, &c.—Return.
107. Metropolitan Board of Works—Return.
134. Roman Catholic Burial Ground (Sydenham)—Return.
84. West Riding of Yorkshire Assizes—Return.
151. Harbours of Refuge—Correspondence.
93. Holyhead Harbour (Communications, &c.)—Return.
102. Holyhead Harbour (Vessels Wrecked, &c.)—Return.
139. Chain Cables and Anchors Bill—Report of Select Committee.
146. Sir Rowland Hill—Copy of a Letter, &c.
154. Piers and Harbours (Provisional Orders)—Report of the Boarp of Trade.
119. Metropolitan Police (1863)—Accounts.
122. Royal Dublin Society—Return.
127. Berwick-upon-Tweed Election—Minutes of Evidence.
137. Shipping—Returns.
138. Registration of Designs—Return.
140. Standing Orders—Report (Sheffield, Chesterfield, and Staffordshire Railway).
155. Friendly Societies—Account.
123. (I). Savings Banks—Return.
130. Spirits—Return.
82. East India (Native Princes)—Returns.
123. Saving Banks—Accounts.
125. Gulf of St. Lawrence, &c.—Return.
135. Poor Law (William Adey)—Return.
141. Railway Companies' Powers—Report from Committee.
147. Highway Officers and Highways Act—Return.
160. Salmon Fisheries (England and Wales)—Third Annual Report of the Inspectors.
115. Standard Weights and Measures—Return.
133. East India (Bullion)—Return.
66 (II). Trade and Navigation Accounts (29th February, 1864.
142. Grain—Report from the Commissioners of Customs.
156. Cashel, Emly, &c., Dioceses—Return.
157. National Education (Ireland)—Return.
103 (I). Civil Services, Estimates—Class I.
131. Dockyards (Timber and Timber Materials and Stores—Return.
132. Dockyards (Accounts)—Return.
46. Bills—Chain Cables and Anchors (amended by the Select Committee).
48. — Jersey Court.
52. — Chief Rents (Ireland).
53. — Bank Notes (Scotland).
54. — Warehousing of British Spirits (amended).
49. — Registration of County Voters (Ireland).
55. — Factory Acts Extension.
56. — Life Annuities and Life Assurances.
57. — Collection of Taxes (amended).
58. — Costs Security.
Chancery Funds Commission—Report.
North America (No. 7) (Enlistment of British Seamen at Queenstown on board the *Kearsage*)—Correspondence.
North America (No. 8) (Recruitment in Ireland)—Correspondence.
New Italian Tariff—Rates of Customs Duties, &c.
Iron Structures—Report by Mr. Fairbairn to the Board of Trade.
China (No. 4)—Commercial Reports.
Japan (No. 2)—Correspondence.
North America (No. 9)—Papers relating to the Seizure of the *Chesapeake*.'
Denmark and Germany (No. 5)—Correspondence respectin Holstein, Lauenburg, and Schleswig.
Affairs of Denmark (1850-53)—Correspondence.

SESSION 1863.

540. Union Assessment Committees—Return.

Delivered on 5*th April*, 1864.

124. Court of Probate (London and Dublin)—Account.
Church Estates Commissioners—Thirteenth Report.
Barrack and Hospital Commission—Report on Ventilation of Cavalry Stables.
Ecelesiastical Commissioners for England—Sixteenth Report.

Delivered on 6*th April*, 1864.

49 (1). Navy (Labour Charts)—Return.
148. Prisoners, &c.—Return.
151. Harbours of Refuge—Copy of Correspondence.
Polynesian Islands—Correspondence respecting Removal of Inhabitants to Peru.

Delivered on 7*th April*, 1864.

163. Sugar—Account.
United States—Treaty for the Settlement of the Claims of the Hudson's Bay and Puget's Sound Agricultural Companies.

Delivered on 8*th April*, 1864.

104. Revenue Departments—Estimates.
59. Bill—Copyright (No. 2).

Delivered on 9*th and* 11*th April*, 1864.

19. Railway and Canal, &c. Bills (253. Bristol Central Station and Railways: 254. Bristol Port and Channel Docks; 255. Bristol Port Extension Railways; 256. Dublin Grand Junction Railway; 257. Dublin Metropolitan Railway; 258. Dublin Railway; 259. Dublin, Rathmines, Rathgar, &c. Railways; 260. Dublin Trunk Connecting Railway; 261. Great Southern and Western and Midland Great Western Junction Railway; 262. Harwich Corporation; 263. London Docks, Saint Katherine Docks, and Victoria (London) Dock Amalgamation; 264. Oswestry, Ellesmere, and Whitchurch Railway (No. 2); 265. Regent's Canal (Limehouse Basin); 256. Saint Helen's Canal and Railway)—Board of Trade Reports.

118. Police (Counties and Boroughs)—Copies of Memorials.
43. Education (Examination at the Training Colleges)—Returns.
161. Spirits—Returns.
164. Paper, &c.—Returns.
165. Parish Assessments (Middlesex, &c.)—Returns.
175. Kitchen and Refreshment Rooms (House of Commons)—Report.
176. North America (Munitions of War)—Account.
191. Army (Yeomanry Cavalry)—Supplementary Estimate.
Public General Acts—Caps. 1, 2, 3, 4, 5, and 6 (delivered on 6th April, 1864).

Delivered on 12*th April*, 1864.

145. Kagosima (Armstrong Guns)—Admiral Kuper's Report.
50. Prisons (England and Wales)—Return.
177. Capital Convictions—Return.
178. Training and Model Schools (Ireland)—Return.
188. Spirits, Wine, Sugar, &c.—Return.
189. Printing of Papers—Copy of Treasury Minute.
Persia (Construction of a Telegraph Line)—Correspondence.

Patents.

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From Commissioners of Patents Journal, April 15*th.*

GRANTS OF PROVISIONAL PROTECTION.

Aerial machine—748—W. E. Gedge.
Air, apparatus for heating—790—T. Waller.
Alcohol, registration of—856—E. T. Hughes.
Animal black, apparatus for revivifying—754—R. A. Brooman.
Armour plates, construction of—764—E. Hill.
Armour plates, manufacture of—816—C. Sanderson.
Artificial fuel—848—R. A. Brooman.
Boots and shoes, apparatus for polishing—704—T. J. Searle.
Boots and shoes, manufacture of—714—C. Hill.
Braiding machinery—540—G. T. Bousfield.
Bricks, &c., pulverising clay for—634—J. Platt and W. Richardson.
Bricks, tiles, &c., apparatus for making—720—P. Effertz.
Cables, &c., chains for—844—J. Roberts.
Calendering, mangling, &c., apparatus for—854—D. Stewart.
Cannon, &c., hoops used in the manufacture of—787—D. Treadwell.
Carding engines—776—E. Grether.
Chimney tops and ventilators—694—G. F. Chantrell.
Clocks, &c., spring barrels for—692—J. Genevrior and P. E. Bidaux.
Combs and brushes—792—R. Douglas.
Cotton seeds, treating a product from the oil of—783—C. Doughty.
Dyeing, &c., blue colour for—286—W. and W. H. Watson.
Engines, traction and hauling—750—W. Roberts.
Fabrics, dyeing of—690—L. A. Durrier.
Fibres, machinery for combing—757—A. Staples.
Fibrous materials, engines for carding—808—J. Bickerton.
Fibrous materaials, frames used in preparing—802—J. Prestwich, jun., and W. Brooks.
Fibrous materials, machinery for spinning—684—J. and J. Horrocks.
Fibrous materials, mules for spinning, &c.—850—J. Platt and E. Spencer.
Fibrous materials, presses for packing—734—W. Routledge and F. F. Ommanney.
Fibrous substances, apparatus for preparing, &c.—846—M. J. Roberts.
Fibrous substances, preparing and spinning—742—J. and J. Wild.
Fire-arms—670—P. A. L. de Fontainemoreau.
Fire arms, breech-loading—752—S. Matthews.
Fire-bars, mounting and giving motion to—706—W. A. Martin and E. Wylam.
Fire grates—777—S. Harrison and W. Clements.
Flax and hemp, heating the contents of vats for steeping—716—G. and C. Firmin.
Gasaliers, slides for—746—S. Bark, T. Attwood, and J. D. Robinson.
Gas burners—755—V. Dubourg.
Gas generating apparatus—806—R. A. Brooman.
Gas lighting and ventilating apparatus—675—E. T. Wakefield.
Grain, machine for hulling—779—W. E. Newton.
Gun carriages, apparatus used with—722—G. T. Bousfield.
Hair brushes, rotatory—794—R. Douglas.
Hair brushing, apparatus for—804—W. Holbrook.
Hair-cutting apparatus—864—R. Douglas.
Hats, &c., manufacture of—756—W. Clark.
Irons, smoothing and pressing—730—F. Tolhausen.
Knitting machines, circular—814—T. Coltman.
Land, machinery for cultivating—818—A. Macrae.
Looms—682—D. Dalglish.
Looms—688—J. Edmondson and T. Ingram.
Looms—724—S. Berrisford and W. Ainsworth.
Looms—780—H. Holden and E. S. Forshaw.
Looms—788—T. Allan.
Looms—810—J. Bullough.
Lubricating apparatus—686—W. Clark.
Macerating vessels—698—G. Kershaw.
Marine steam-boilers, self-acting apparatus for—696—J. Burrell.
Marine steam engines, condensing the steam of by external surface—743—R. H. Wright.
Matches, manufacture of—766—E. Pace.
Messages, sounds, &c., apparatus for conducting—744—E. Leak.
Metallic packings—3088—T. A. Blakeley.
Metallic surfaces, &c., plastic compound for the protection of—728—F. L. Roux.
Military knapsacks, &c.—838—T. Brown.
Mines, ventilation of—762—E. Lever.
Mines, ventilation of—786—J. Lang.
Mining, &c., blasting for—775—I. M. Evans.
Moulding—736—T. H. Head and H. Smith.
Music printing, &c.—774—T. B. Harpur.
Paddle-wheels, construction of—840—W. E. Newton.
Paper, manufacture of—834—L. Cooke.
Piers, sea walls, &c., foundations for—836—G. R. Stephenson.
Plates, tubes, &c.—320—M. C. de Casteras Sinibaldi.
Pneumatic railways and tubes—758—T. W. Rammell.
Propulsion, mechanism applicable to—860—H. G. Fuller.
Pumps—708—E. Borrows.
Railway carriages, &c.—652—T. Chamberlayne.
Railways, &c.—572—W. Moir and C. E. Serjeant.
Reaping and mowing machines—726—D. H. Barber.
Reservoirs, construction of—830—T. H. Head.
Respiratory apparatus—668—J. Carrick.
Revolver fire-arms—760—G. T. Bousfield.
Ribbons, manufacture of—710—P. Berghans.
Rocks, &c., apparatus for boring—795—W. E. Newton.
Rods, bars, &c., bending or straightening of—718—J. Bennie, jun.
Rollers, &c., coating the surfaces of—842—E. K. Dutton.
Rotatory-engines—862—G. Smith.
Rudders—824—J. T. Fitzmaurice.
Sails, reefing and stowing—761—M. Clough.
Scenic effects, apparatus for producing—826—W. Callcott.
Ships, construction of—771—M. Scott.
Silk waste, &c., preparation of—759—J. Warburton.
Smoky chimnies, apparatus for curing—822—J. Capper.
Steam engines—798—W. Martin and J. Hodgson.
Steam generators, feeding of—828—E. U. Parod.
Steam, means of generating—812—A. Prince.
Steam ships, &c., propelling of—554—J. Lockwood and J. Wetherill.
Stocks, neck-ties, &c., fastenings for—740—G. Couchman.
Stoking shovels, &c.—852—J. H. Johnson.
Stones and minerals, machinery for breaking—784—H. Smith and E. Roberts.
Sugar moulds—700—D. Jones.
Table covers, &c.—793—J. Williamson.
Textile fabrics, apparatus for tentering, &c.—768—J. Coulter and J. A. Barber.
Textile fabrics, beetling or finishing—796—R. Ferguson and W. Lattimer.
Washing machines, &c.—623—J. Crompton.
Watches—570—C. E. Laederich.
Water, supplying air to persons employed under—770—M. Henry.
Wood, &c., machinery for turning, &c.—797—H. Bayley, L. Newton, and J. Greaves.
Woollen fabrics, machinery for cleansing—712—F. T. Moison.
Woollen shirts, &c.—702—C. Billson.
Yarns and threads, composition for sizing—782—A. Heald.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Gunpowder, manufacture of—900—E. Dronke.
Sewing machine—921—W. N. Wilson.

PATENTS SEALED.

2551. F. de Wyldé.
2552. J. Champion.
2559. J. Taylor, and J. and J. Lees.
2561. W. Ingham and I. Wood.
2575. C. Garton and T. Hill.
2578. W. Hartcliffe.
2585. G. Haseltine.
2587. R. A. Brooman.
2595. J. Craven and S. Fox.
2608. R. Bridson and J. Alcock.
2620. J. Parker.
2630. W. Locke, J. Warrington, W. E. Carrett, W. E. Marshall, and J. Telford.
2641. M. Vian.
2716. J. Macintosh.
2778. M. Mellor.
2896. W. B. Adams.

From Commissioners of Patents Journal, April 19*th.*

PATENTS SEALED.

2590. J. Dodd.
2592. G. Cutler, jun.
2598. J. W. Friend and B. F. Weatherdon.
2603. A. Kinder and J. Inglis.
2604. B. Noakes and F. J. Wood.
2605. C. J. Pownall.
2606. W. W. Burdon.
2607. R. A. Brooman.
2611. J. L. Jurgens.
2613. M. A. Boyle.
2616. J. T. Webster.
2617. J. Ronald.
2624. E. S. Crease.
2625. J. Davidson.
2629. J. Brown, J. T. Way, and T. M. Evans.
2631. L. J. Hannart.
2657. E. R. Hollands.
2670. W. Nall.
2682. J. Haworth.
2692. W. Verran.
2697. H. B. Barlow.
2710. F. J. Vandenvinne.
2854. J. Lewis.
3062. J. H. Johnson.
430. G. H. Johnson.
433. T. Jackson.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

981. J. B. J. Noirot.
993. E. D. Bourne and P. Davis.
927. F. Gye.
943. W. A. Dixon.
1006. P. Ward.
956. A. V. Newton.
973. W. Hudson and C. Catlow.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

1054. B. O'N. Stratford.
1070. J. Safran.